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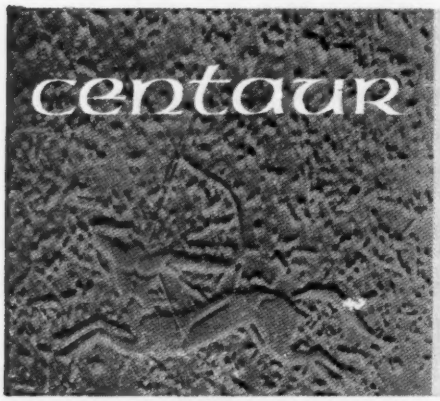

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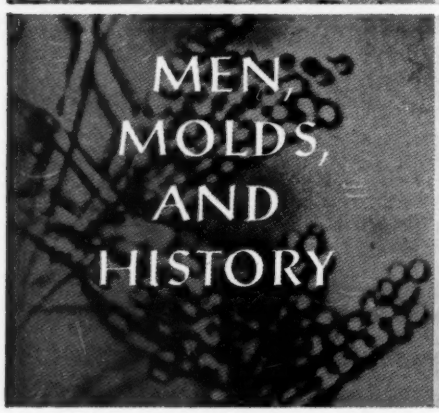

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VOL. 173 NO. 2 *WHOLE NUMBER 2924* *FEBRUARY 1960*

EUGENE L. BODIAN — Oral Treatment of Dermatomycosis and Onychomycosis with Griseofulvin ... 85

ARMAND A. JACQUES AND VAL H. FUCHS — Clinical Evaluation of Clemizole in Allergic Rhinitis ... 88

THOMAS E. CURTIS, MARY G. CLARKE, AND D. W. ABSE — Etiological Factors in Peptic Ulcer as Revealed in Group-Analytic Psychotherapy ... 92

INTERNATIONAL CLINICAL NEWSLETTER ... 97

FELIX MARTI-IBAÑEZ — Symbols and Medicine ... 99

HENRY L. DREZNER — Emotional Hypertension and Anxiety Neuroses with Cardiac Symptoms: Treatment with Methylnonyl Dioxolane–Reserpine Combination ... 126

WALTHER RIESE — Obituary: Jean Lhermitte (1877-1959) ... 130

BOOK REVIEWS

STANLEY D. MIROYIANNIS — 501 Questions and Answers in Anatomy ... 132

ADRIAN E. FLATT — The Care of Minor Hand Injuries ... 132

HERBERT S. GOLDBERG, EDITOR — Antibiotics, Their Chemistry and Non-Medical Uses ... 132

H. D. KRUSE, EDITOR — Integrating the Approaches to Mental Disease ... 133

WALTER JUELICH — My Human Zoo: The Story of a Refugee Doctor ... 134

DANIEL STOWENS — Pediatric Pathology ... 134

EDWIN B. STEEN AND ASHLEY MONTAGU — Anatomy and Physiology. Volume 1: Cells, Tissues, Integument, Skeletal, Muscular, and Digestive Systems, Blood, Lymph, Circulatory System ... 135

ALFRED AUERBACK, EDITOR — Schizophrenia: An Integrated Approach ... 135

SILVANO ARIETI, EDITOR — American Handbook of Psychiatry ... 135

ERIKA CHANCE — Families in Treatment: From the Viewpoint of the Patient, the Clinician and the Researcher ... 136

THOMAS M. RIVERS AND FRANK L. HORSFALL, JR., EDITORS — Viral and Rickettsial Infections of Man ... 136

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TABLE OF CONTENTS

Introduction: The Spirit of American Medicine *by Félix Martí-Ibáñez*
Guideposts in the History of American Medicine *by Benjamin Spector*
Medicine and Medical Practices among Aboriginal American Indians *by John Duffy*
Diseases and Medical Practice in Colonial America *by John B. Blake*
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American Medicine in the World Today: An Historical Perspective and Reappraisal *by Ralph H. Major*

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Oral Treatment of Dermatomycosis and Onychomycosis with Griseofulvin

Eugene L. Bodian, M.D.

GREAT NECK, N. Y.

Because fungous infections of the skin, hair, and nail have been extremely resistant to standard treatments, introduction of an orally effective antimycotic agent, griseofulvin (Fulvicin*), has aroused widespread interest. Griseofulvin, a fermentation product of three types of *Penicillium*, was identified by Oxford and colleagues[1] in 1939. Until very recently it was used only as an antibiotic in plants. Reports of the effectiveness of griseofulvin against induced tinea in laboratory animals by Gentles et al[2,3] and Martin[4] directed attention to its therapeutic possibilities.

Riehl[5] was the first to report successful use of this agent to treat tinea in man. Since then several groups of investigators[6–12] have administered griseofulvin for *Trichophyton* and *Microsporum* infections of the hair, nails, or glabrous skin in approximately 300 patients. There was clinical and laboratory evidence of cure in all patients who completed therapy. Dosage varied between 750 and 1500 mg. daily for periods of several weeks to several months. Tinea capitis or corporis usually was eradicated in less than six weeks; about four months of therapy was required for complete relief of onychomycosis. Repeated analyses of blood and urine showed no significant variations during the period of therapy. The clinical side effects that occurred in a few patients (headache, gastrointestinal distress, or urticaria) disappeared spontaneously despite continued administration. Resistance or relapse has not been a problem.

METHOD

Griseofulvin was administered to 45 patients (table I) with confirmed *Trichophyton* or *Microsporum* infections of the hair, nails, or skin. Most of these patients had been treated previously with topical preparations and 3 had received roentgenotherapy. Improvement, if any, had been transient and symptomatic.

The organisms were identified in culture. Potassium hydroxide determinations

* The trade name of Schering Corp. for griseofulvin is Fulvicin. Clinical research supplies of griseofulvin were provided by G. Kenneth Hawkins, M.D., of the Division of Clinical Research, Schering Corp., Bloomfield, New Jersey.

TABLE I

Composition of Series

Number of patients	Age range, yr.	Clinical diagnosis	Laboratory diagnosis	Duration of infection
4 male 1 female	1½–6	Tinea capitis	*Microsporum audouini* or *Microsporum canis*	½–6 months
2 male 7 female	29–53	Onychomycosis	*Trichophyton mentagrophytes* or *Trichophyton rubrum*	1½–20 years
8 male 3 female	23–52	Onychomycosis and tinea pedis	*Trichophyton rubrum*	2–20 years
4 male 3 female	26–47	Tinea corporis and tinea pedis	*T. rubrum*	2–20 years
4 male 9 female	14–47	Tinea pedis	*T. rubrum*	1–25 years (usually seasonal)

and examinations under Wood's light (in tinea capitis) were made before, during, and after administration of griseofulvin. Analyses of blood and urine were performed in all patients every two weeks.

The dosage of griseofulvin was 250 mg. three or four times daily, except in young children, who received a 250 mg. tablet twice daily. Administration was continued until there was laboratory and clinical evidence of eradication of the fungus. This required one to six weeks in patients with dermatomycosis and up to five months in patients with onychomycosis.

RESULTS

Patients with tinea of the glabrous skin reported marked relief of pruritus during the first two to four days of therapy. Within one week there was drying of the vesicles and decreased erythema and maceration. The hyperkeratotic layer sloughed off during the first two weeks. The first negative cultures were obtained three to six weeks after therapy was begun.

Examinations of hair from patients with tinea capitis showed that the characteristic fluorescence under Wood's light disappeared between the third and sixth weeks.

In patients with onychomycosis, some growth of healthy nail was observed during the third or fourth week. The previously thickened, dystrophic subungually hyperkeratotic nails were clinically and microscopically normal after four to five months of therapy.

Urinalyses and blood chemistry values remained essentially normal in all patients and only 3 of the 45 reported side effects. Two experienced nausea; 1 patient discontinued therapy but the other continued, on a slightly lowered dosage, and the nausea did not recur. The third patient had abdominal discomfort during the first days of therapy, which disappeared although administration of griseofulvin was maintained at the previous level.

COMMENT

Most of the patients in this series had chronic, recurrent, extremely resistant cases of tinea. Laboratory examinations had been strongly positive before treatment but were repeatedly negative at the conclusion of therapy with griseofulvin. No recurrences have been observed in patients who completed treatment.

The dosage of 250 mg. postprandially and at bedtime appears to be satisfactory for most adult patients, although further evaluation is required before optimal dosage factors in specific indications can be determined.

SUMMARY

Griseofulvin, 250 mg. two to four times daily, was administered to 45 patients with superficial mycoses due to species of *Microsporum* and *Trichophyton*. Clinical and laboratory evidence of cure was seen within six weeks in patients with tinea of the hair or skin. In onychomycosis, a growth of uninfected nail usually was observed after a month's treatment. After four to five months the entire nail became normal.

This new oral therapy for tinea is dramatically effective and, unlike topical medication, produces complete eradication of the parasite as well as rapid symptomatic relief. The drug apparently does not affect physiological variables although mild clinical side effects occur occasionally.

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Clinical Evaluation of Clemizole in Allergic Rhinitis

*Armand A. Jacques, M.D., and Val H. Fuchs, M.D.**

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NEW ORLEANS, LA.

Recently a new antihistamine, clemizole,† was made available for clinical investigation in the management of allergic disorders. The drug is a benzimidazole derivative (1-p-chlorobenzyl-2-pyrrolidyl-methyl-benzimidazole) reported to have a broad therapeutic index and remarkably low toxicity.[1, 7] Acute toxicity studies in rats given clemizole showed the LD_{50} to be 30 mg./Kg. when taken daily in drinking water for 21 days.[10]

The antihistaminic activity of clemizole has been evaluated in the guinea pig and man. Clemizole has been shown to be superior to atropine and other antihistamines in preventing histamine-induced asthma in the guinea pig.[8, 9] Antihistaminic activity was tested in man by dermographic tests. Histamine and mixtures of histamine and clemizole were compared by effects produced with subcutaneous injection. The addition of clemizole to histamine regularly caused a reduction in the histamine-induced wheals and in the pain of injection.[2]

When administered orally in a dosage of 20 mg./60 Kg. in human beings, the drug is reported to appear in the serum after five minutes and its effect is demonstrable on the skin after 10 minutes. When the drug is taken orally at four-hour intervals, effective serum concentrations have been maintained over a 12-hour period.[7] Clinically effective oral doses of clemizole have been observed to be, on the average, half as high as those required with other antihistaminics.[7]

Clemizole was selected for this investigation on the basis of previous clinical reports of prompt relief of allergic symptoms and the remarkably low incidence of side effects. Excellent clinical results have been reported in more than 500 patients suffering from seasonal and perennial hay fever and various dermatological conditions (e.g., urticaria, neurodermatitis, eczema, food and drug allergies).[1–7, 11]

Previous clinical experience with clemizole indicated that the antihistamine is exceptionally well tolerated on prolonged administration. Zierz and Greither[1] reported drowsiness in only 1.3 per cent of the patients treated, and Dulce[3] observed no side reactions, even with daily doses of 120 mg. Twenty-four patients given 90 to 300 mg. of clemizole daily for periods up to five days reported only slight fatigue and, less frequently, gastric pressure. Furthermore, patients who had shown poor tolerance to other antihistamines were reported to have no reactions to clemizole.[2] In children, administration of clemizole produced no signs of intolerance.

---

* Chairman, Department of Otorhinolaryngology, Louisiana State University, School of Medicine.

† The trade name of J. B. Roerig & Co. Division, Chas. Pfizer & Co., Inc., for clemizole tannate is Allercur oral suspension; for clemizole hydrochloride, Allercur parenteral and Allercur tablets.

PROCEDURE

Seventy-four adults (aged 15 to 54) and 30 children (aged 5 to 14) were given clemizole tannate or clemizole hydrochloride for relief of symptoms associated with allergic rhinitis, asthma, vasomotor rhinitis, and various coincident conditions (see table I). Symptoms included those commonly associated with allergy—rhinorrhea, sneezing, postnasal drip, lachrymation, "itchy" nose and eyes.

Three dosage forms were included in the study and generally were employed according to the age of the patient and the severity of the symptoms. Four adults received 10 mg. (1 ml.) of clemizole intramuscularly alone, while an additional 3 patients received a single 10 mg. (1 ml.) dose of clemizole hydrochloride intramuscularly, followed by 2 teaspoonfuls of the oral suspension taken four times daily for five days. Seventy-four patients (60 adults, 14 children) received 1 to 2 tablets (20 to 40 mg.) of clemizole hydrochloride two to four times daily for periods of one or two weeks; 1 adult received 1 tablet six times daily for one week. Twenty-two patients (6 adults, 16 children) received one to two teaspoonfuls (20 to 40 mg. clemizole as the hydrochloride) of the oral suspension, two to four times daily for five to six days.

RESULTS

At best, the criteria for the evaluation of an antihistamine must be subjective when based on the relief of allergic symptoms such as those described. Furthermore, the effectiveness of any such drug must be measured in terms of the degree of relief provided between doses, since complete and permanent remission of all symptoms is seldom feasible. Below are listed the definitions of terms employed in describing the results of this study: excellent: complete or near complete remission of all symptoms, and no side effects that necessitated discontinuing therapy; good: marked relief from the major symptom(s), and no side effects as just described; fair: moderate lessening of the major symptom(s); poor: very little or no response in the major symptom(s).

Of the 104 adults and children given clemizole in its various dosage forms, 92 (88.5 per cent) responded to treatment. Clemizole was particularly effective in the relief of sneezing and rhinorrhea, which were the chief complaints in the majority of cases. It was noted that, of the 30 children treated with clemizole oral suspension or tablets, a greater proportion appeared to exhibit a somewhat better response to the drug than did the adults. Twenty-nine of the 30 children responded to therapy, and of this number, 24 exhibited a good or excellent effect. Of the group of 74 adults treated with clemizole parenteral, oral suspension, or tablets, 63 responded to treatment. Of this number, 49 exhibited a good or excellent effect. Onset of relief usually occurred within two to four hours.

No significant difference was evident in the relative number of adults or children who responded to treatment with the tablets or oral suspension. Each of the 7 adults given clemizole intramuscularly, whether followed by the oral suspension or not, responded to treatment.

Of the 70 patients with allergic rhinitis and coincident complications, 62 responded to treatment, and within this group, good or excellent results were noted in

TABLE I

Results of Treatment with Clemizole

Diagnosis	Number of patients		Clemizole dosage form			Duration of therapy, days	Results‡			
	Adults	Children	Parenteral,* ml. intramuscularly	Oral suspension,† teaspoonfuls	Tablets*		E	G	F	P
Allergic rhinitis	1		1	2, 4 times daily		5	1			
Allergic rhinitis	1		1	—		Single dose			1	
Allergic rhinitis	15	1			1–2, 2–4 times daily	7–14	5	6	4	1
Allergic rhinitis		6		1, 3 times daily		5–6	3	2	1	
Allergic rhinitis, severe	1		1	2, 4 times daily		5		1		
Allergic rhinitis, severe	1		1	—		Single dose		1		
Allergic rhinitis, severe	12	3			1–2, 2–6 times daily	7–14	7	2	2	4
Allergic rhinitis, severe		3		1, 3 times daily		5–6		2	1	
Allergic rhinitis, severe; early bilateral catarrhal otitis media	1				2, 2–3 times daily	7	1			
Allergic rhinitis, conjunctivitis	1		1	—		Single dose	1			
Allergic rhinitis, conjunctivitis	8	1			1–2, 2–4 times daily	7–14	5	3	1	
Allergic rhinitis, conjunctivitis	1	2		1–2, 3–4 times daily		5	1	2		
Allergic rhinitis, epistaxis		1			1, 3 times daily	7	1			
Allergic rhinitis, eustachianitis		1		1, 3 times daily		5				1
Allergic rhinitis, severe; pharyngitis	1				2, 3 times daily	7	1			
Allergic rhinitis, pharyngitis	2				2, 3 times daily	7		1	1	
Allergic rhinitis, pharyngitis, sinusitis	1				2, 2 times daily	7				1
Allergic rhinitis, sinusitis	4	1			1–2, 2–3 times daily	7–14		2	2	1
Allergic rhinitis, sinusitis	1			2, 4 times daily		5			1	
Asthma, chronic; allergic rhinitis	1				1, 4 times daily	14			1	
Asthma, chronic; vasomotor rhinitis	1	2			1, 2–3 times daily	7–14	2	1		
Vasomotor rhinitis	1		1	2, 4 times daily		5			1	
Vasomotor rhinitis	1		1	—		Single dose		1		
Vasomotor rhinitis	6	2			1–2, 2–4 times daily	7–14	3	4		1
Vasomotor rhinitis	2	3		1–2, 3–4 times daily		5–6	2	1	1	1
Vasomotor rhinitis, severe	1				2, 2–3 times daily	7			1	
Vasomotor rhinitis, severe		1		1, 3 times daily		6	1			
Vasomotor rhinitis, allergic conjunctivitis	4	2			1–2, 2–4 times daily	7–14	2	4		
Vasomotor rhinitis, allergic pharyngitis	1	1			1–2, 2 times daily	7		2		
Vasomotor rhinitis; allergic pharyngitis, severe	1				2, 3 times daily	14				1
Vasomotor rhinitis, allergic sinusitis	2				2, 2–3 times daily	7	1		1	
Vasomotor rhinitis, allergic sinusitis	2			1, 4 times daily		5	1			1
Total	74	30					38	35	19	12

* Clemizole hydrochloride. † Clemizole tannate. ‡ E = excellent; G = good; F = fair; P = poor.

48. Twenty-six of the 30 patients with vasomotor rhinitis responded to clemizole, and of this number, 22 exhibited a good or excellent effect. Of the 4 asthmatic patients treated, 3 showed a good or excellent response and 1 a fair response.

The incidence of side effects due to treatment with clemizole was extremely low. Two adult patients receiving oral dosage forms of the drug reported slight drowsiness, which did not necessitate interruption of therapy. One adult receiving clemizole intramuscularly reported pain at the site of injection, which persisted for 10 to 15 minutes; however, this effect could not be definitely attributed to the drug.

SUMMARY AND CONCLUSIONS

One hundred and four patients, including 74 adults and 30 children, were treated with clemizole tablets, oral suspension, or parenteral solution for relief of symptoms associated with vasomotor rhinitis, allergic rhinitis, or asthma. Of the 92 patients (88.5 per cent) who responded to treatment, approximately 73 (80 per cent) showed an excellent or good response.

Clemizole appears to be an effective antihistamine with a remarkably low incidence of side effects. Drowsiness was the only untoward effect attributed to the use of the drug; this side reaction was evident in only 2 of the 104 patients treated and did not necessitate interruption of therapy.

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Etiological Factors in Peptic Ulcer as Revealed in Group-Analytic Psychotherapy

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INTRODUCTION

Much investigative work has been devoted to the study of peptic ulcer, which is now regarded by many as a psychophysiological disorder par excellence. Emerging from this work are a number of theories concerning etiological factors that contribute to the development of peptic ulcer. Observations have been made correlating the physiological activities of the stomach and intestinal tract with specific emotional reactions of the individual to extrinsic and intrinsic events. Studies of the personality structure of these somatic reactors have yielded individual meaning of the particular factors in operation at the time of onset or relapse of the disorder. This work was well summarized by Rosenbaum.[1]

This is a report of a study carried out at the University of North Carolina, utilizing the investigative and therapeutic instrument of group-analytic psychotherapy as developed by Foulkes.[2, 3] Preliminary reports on this work have been presented elsewhere by the authors and by Fortin and Abse.[4, 5]

Our psychoanalytic background and conceptual framework aided us in understanding and facilitating the process of therapy. However, we have not regarded the processes of therapy as identical with those observed in the individual psychoanalytic situation. The group was regarded as a transference group in that members of the group could use each other and the therapist as transference figures, and in this way transference manifestations became accessible to interpretation. This interaction between members of the group and the therapist and among members of the group developed with considerable complexity. The technique of "free-floating discussion" yielded such content material as recollections, fantasies, and dreams. Discussions within the group also encouraged reality testing and consideration of the current activities and goals of various members of the group, particularly of how these were influenced by the past. From our understanding of the meaning of the therapeutic interactions as well as the content of the material from the "free-floating discussions," we were able to make some of the interpretations that will be outlined here. We were also able to utilize data from projective psychological tests.

SCOPE OF STUDY

This was a pilot study and was exploratory in nature. In this paper we are restricting ourselves to a focus on specific common factors within the group that became apparent as the group progressed in therapy.

This group was composed of 8 male university students at both graduate and under-

graduate levels. They were originally seen in the student health service for epigastric complaints, typical of peptic ulcer. The diagnosis was verified radiologically. None had actively complained of neurotic symptoms nor had they sought the aid of a psychiatrist. The mean average age was 24 years with a distribution from 19 to 31 years. Although in general these were instances of "uncomplicated ulcer," 1 person had a history of persistent gastritis with two massive hemorrhages and an associated history of episodic mucous colitis. One person had a history of "spastic colitis" since infancy and mucous colitis under stress. Only 1 student had been hospitalized prior to therapy, for migraine headaches during his military service. Descriptively, the majority fell into the category of passive-aggressive personality types with episodes of acting-out behavior. One had previously manifested transient borderline disturbances and showed schizoid personality traits.

COURSE OF THERAPY AND GENERAL DISCUSSION

The course of therapy extended over two academic years. The group met twice weekly for periods of 90 minutes. All sessions were tape recorded in full view of the participants. A female nonparticipant observer (M. G. C.) was present at the majority of the sessions. The tapes were reviewed and the meetings discussed regularly with a senior consultant (D. W. A.) as the therapy progressed and after termination of the group. The group was ultimately discontinued with completion of academic careers at this university by the majority of the members of the group. Under other circumstances, treatment would have continued for an additional number of months, although considerable progress had taken place. One member made arrangements to continue therapy in another city, and another is anticipating such action. None had ulcer symptomatology after the group was well under way. Some remained on ulcer regimens for a short time initially.

There was a major threat to the continuation of the group at mid-point when it became necessary for the therapist to leave the state. After a period of uncertainty, two of the authors (T. E. C. and M. G. C.) assumed the positions of therapist and observer. Continuity of contact was maintained through the consultant.

The group reacted quite strongly to this change. Two students returned only sporadically thereafter. One of these left the group after two sessions, denying further need for therapy, although he was in the midst of considerable difficulties in a courtship. At the time, he was manifesting concern over a herpetic lesion on the foreskin and the need for circumcision. He also had fantasied and discussed reorganizing the group outside of the therapeutic setting. The other student left the group after attending intermittently. His studies had been completed and he was having considerable unhappiness and epigastric difficulties in managing the shift from school to business life. He expressed strong wishes to remain with the group; however, significantly, his wife was so strongly jealous of the group and opposed to his continuing that he complied with her wishes. The students remaining in the group reacted individually and collectively in various ways. There was a heightening of resistance and increased defensiveness in the group meetings. Intellectualization was prominent, and the members tended to function as a unit, excluding the

therapist almost completely, as if to show, in reprisal for feeling they were not important to the conductor, that they could operate without one. After suitable interpretations of this defensive position they verbalized feelings of being unwanted stepchildren. One discussed fantasies of following the former therapist for a reunion to become one of his most-loved patients. (In fact he made a token visit to the therapist after termination of the group.) One student became belligerent and irritable and was hospitalized briefly for injuries sustained in a campus fight. All commented on epigastric distress during this phase; however, none developed symptoms or signs of ulcer activity.

The intensity of reaction to the loss of a therapist is perhaps not unique for this group. The reaction of the group, however, became clearly understandable in the light of the significant genetic conflict common to all members of the group; namely, the intense dependency each showed in his relationship with his mother as well as the strong wish to separate from her. They generally purveyed a collective image in which mother was seen as smothering, overprotective, strong, and unwilling to allow separation. The elucidation of this conflict was facilitated by the presence of the woman psychologist, the nonparticipant observer. She was vigorously used as a transference figure during the sessions.

It is pertinent to indicate the circumstances detailed by the patients at the onset of ulcer symptoms. It was possible to trace the onset in all cases to separation from home. This was associated with feelings of shame over the strong dependency needs and fear of being rejected by the mother. In a study of the sociopsychological aspects of peptic ulcer, Pflanz, Rosenstein, and Uexkull[6] found that the onset or relapse of ulcer in 45 male patients coincided with voluntary exclusion or forced expulsion from a community or group. Our experiences suggest that the group itself came to function as a collective mother satisfying the immediate dependency needs of the individual, thus reducing anxiety by means of the support it afforded.

We have mentioned occurrences that suggest that strong libidinal ties with ambivalent characteristics existed in the mother-child relationship of persons in this group. Similar ties were apparent in their relationships with the therapist. The ease with which cohesiveness was established within the group and the rapid development of emotional ties between members of the group were also striking. These were perhaps aided by the similarity of symptoms, age, sex, and intellectual level. As therapy progressed, this ability of the group to function as an interacting and yet cohesive unit gave the support required for individuals to explore their feelings concerning the therapist and ultimately their parents. Also, the support from a collective wish to separate from mother and to identify with a strong father image projected onto the therapist enabled members to engage in more independent activities away from the group. This was apparent in a lessening of archaic repressive forces and a gradually increasing freedom in heterosexual and other social activities. The shift from a high level of defensiveness to a greater awareness of conflictual relationships was also apparent from the projective psychological tests, which were administered at one-year intervals.

As the therapist remained a relatively accepting and yet sufficiently unknown person, he provided a screen for their transference projections. This is perhaps best

exemplified by the ability for increasing awareness and analysis of feelings of hostility toward the mother as seen in one of the members of the group. Initially, the mother was pictured as the powerful goddess-like figure. The student felt uncomfortable in the relatively unstructured therapeutic setting and complained that the therapist did not offer enough advice or show suitable concern. The father was seen as weak and ineffectual, evoking considerable contempt, and as one who provided an unsatisfactory figure for identification. As therapy progressed the student became conscious of resentment of the mother's smothering overcontrol during childhood and extending into his adult life. He came to see similarities with his father in a somewhat more realistic light. His subtle yet angry criticisms of the therapist were less in evidence. There was a gradual but persistent increase in the ability to accept emotional separation from the mother with the formation of more mature object relationships. Through the insights and support obtained in the group, this particular student made active plans for work that encompassed emotional as well as geographical separation from his mother. His plans provided for explorations into hitherto strongly anxiety-evoking heterosexual activities.

The presence of a female observer at first impeded and later facilitated discussions of feelings concerning the mother. The observer was seen as a stern, "Sunday school-like" figure who posed the continuing threat of punishment. On other occasions she became the perplexing madonna figure. In talking of his difficulties with her presence, another member was led through his associations to an event in early childhood when, as a result of a quarrel with his sibling, he was rebuffed by his mother. The memory emphasized was the statement, "Don't call me mother." He recounted that "everything went black" and that he was overwhelmed with the feeling of being alone. In the context of the discussion, this could be interpreted partly as a primary rage reaction and death wish for the rejecting mother.

Members of the group moved in therapy at various speeds; however, this proved to be an asset rather than a handicap. The more mature were active in providing broader perspectives for the others as well as providing models for trials in identification, which were further explored in the group.

The theme of increasing insight into the ambivalent relationship with the mother is stressed here since it focuses on one of the most apparent common elements present in all members of the group. Evidence of unsatisfactory marriage of the parents was seen in its extreme form in the home that was quite disrupted by divorce. In other instances, there was evidence only of the smothering, overcontrolling, overprotective mother contributing to difficulty in separating and identifying with a masculine model. In all instances she was seen as the dominant parent as reconstructed by the patient. She was regarded at deeper levels with immense feelings of rage in the face of the irreconcilable conflict between the natural maturational and developmental surge and the wish to remain a helpless infant and keep mother happy. In the extreme examples within the group, this continuing dyssymbiotic relationship was easily observed. In others it was more deeply buried and only more subtly apparent. In all instances, however, the onset of ulcer coincided with actual or symbolic separation from the mother.

The group setting provided an excellent opportunity for the observation of promi-

nent characterological traits. The students utilized many defensive character patterns that bespoke early oral conflicts. The manifold nature of these character formations contributed to the obvious individual differences seen in members of the group. Oral, and oral cum anal, character formations (as described by Abraham[7] and Glover[8] and as have been recently clarified in some measure by Goldman-Eisler's[9] study of breast-feeding parameters) were prominently displayed in the gradually more emotionally laden interactions of the group. This is illustrated in the following brief systematic sketches.

One patient came to disclose a conflictual view of himself and the world. At first, he evinced an optimistic, overconfident outlook and self-evaluation, insisting that life was fundamentally all good and his own personal future would be one of great good fortune. His own self-image was at first described as strong, admirable, friendly, and well conducted. In the group he was friendly and outgoing, eager to explore the others, but avoiding any scrutiny of himself. Later, he also saw himself in another light and felt that others did too: as conceited, selfish, sarcastic, stubborn, distrusting, irritable, and self-seeking. In this phase of self-evaluation, he considered his body fat and unattractive, longed for an athletic habitus, and regarded his "ulcer" as something raw and distasteful.

Another patient, the "group pessimist," viewed the world as fundamentally disappointing. Close relationships, he felt, were to be avoided as they offered rejection very shortly. As he emerged from his shell, he was overtly bitter and hypercritical in the group. He regarded himself too in a deprecatory light, but presented little of himself at this time. He felt others viewed him as snobbish, conceited, timid, ashamed, sarcastic, and selfish. He dressed very conservatively and regarded his body with discomfort, feeling himself to be effeminate.

SUMMARY

In our experience group-analytic psychotherapy can be a useful investigative and therapeutic instrument in this psychosomatic disorder. This particular experience with patients with known peptic ulcer tended to yield data fitting well into the psychoanalytic concept of early oral fixation as being responsible for the small and fragile fundament of confidence from which many ulcer patients look onto the world. The study produced material that in this respect corroborates Alexander's[10] hypotheses regarding the complex etiology of peptic ulcer.

The mutual support engendered in the group encouraged not only relief of symptoms, but also varying degrees of dynamic insight and shift toward more active masculine attitudes and self-reliance.

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"REGIONAL PERFUSION." The technique of "regional perfusion," which was first employed for directing chemotherapeutic agents into malignant growths, may also be used in treating chronic osteoarthritis, according to a recent report by Robert F. Ryan (Tulane University, New Orleans). Systemically toxic doses of bacitracin, chloramphenicol, and other antibiotics were given to 6 patients by the perfusion method. No side effects occurred; all patients obtained substantial relief, although 3 subsequently suffered recurrences.

MASCULINIZATION IN UTERO. Masculinization in utero of 4 female infants has been associated with administration of estrogenic hormone (stilbestrol) to the mother during pregnancy (J. Clin. Endocrinol. 19:1004, 1959). This complication is unusual in the face of widespread use of estrogens during gestation. Interference with genital differentiation has previously been reported as a result of administration of androgenic hormones and progestins during pregnancy.

SCHISTOSOMA MANSONI INFESTATION. Treatment of 53 Puerto Rican immigrants with lucanthone for Schistosoma mansoni infestation rid all but 3 of eggs in the stool, it was reported at the recent meeting of the American Society of Tropical Medicine and Hygiene. Each patient was treated with 15 mg./Kg. body weight for seven days. Side effects were minimal, and in only 6 instances was reduction of dosage necessary.

ARTIFICIAL KIDNEY. Use of an artificial kidney mechanism developed in the United States has saved more than 500 lives in Great Britain, reported the British Information Service. The mechanism receives blood from the body, purifies it, regulates the balance of salts, and pumps the blood back into the veins. Of 28 pregnant women with acute kidney failure who were assisted by the machine, 26 survived, and of 37 patients with kidney failure due to trauma or shock, 15 were saved.

INFANT FORMULA. A new infant feeding formula (Enfamil, Mead Johnson) has a protein level approximating that of human milk and is also close to the composition of breast milk in its high percentage of unsaturated fatty acids, its use of lactose as the carbohydrate, its 12 essential vitamins, and its mineral content. The protein level provides 9 per cent of calories as compared with the 7 or 8 per cent

of breast milk. The new formula has zero curd tension and a low osmolar concentration.

ELECTROENCEPHALOGRAPH DETECTS MULTIPLE PREGNANCIES. Use of the electroencephalograph for the detection of multiple pregnancies was studied in 295 patients (J.A.M.A. 171:880, 1959). The most favorable period was the twentieth through the twenty-seventh week of gestation, and 100 per cent accuracy of diagnosis of multiple pregnancy was achieved in this period. The earliest positive diagnosis of twins was made at 16 weeks, and an accurate diagnosis of triplets at 20 weeks. Because of the convenience and safety of this instrument, the authors recommend that it be used more widely for this purpose in obstetrics.

NEW COLONIC EVACUANT. Bisacodyl (Dulcolax, Geigy), a contact laxative, was administered in tablet or suppository form to 74 patients to induce the first postoperative intestinal evacuation (Canad. M. A. J. 80:719, 1959). The drug was effective in 69 of these cases, and no side reactions were encountered. Postoperative sedation seems to have only a very slight influence on the action of bisacodyl.

REDUCING CHOLESTEROL LEVELS WITHOUT DRUGS. A method of reducing cholesterol levels without drugs by use of a "prudent diet" was reported at the recent annual meeting of the American Heart Association. Good results were achieved in 97 men who consumed 2000 to 2700 calories daily, containing from 30 to 33 per cent fats, mostly unsaturated. The diet was planned to meet the nutritional requirements set by the National Research Council and uses foods available in every American community.

ANABOLIC STEROID. A new injectable anabolic agent, nandrolone phenpropionate (Durabolin, Organon), acts as a potent tissue-building agent by rapidly establishing a positive nitrogen balance through increased utilization of protein intake. Indicated for the asthenic, undernourished, or debilitated patient, the drug maintains calcium balance with subsequent marked improvement in skeletal disorders such as osteoporosis and certain types of mammary cancer with osseous metastases.

NEW MUSCLE RELAXANT. Chlormezanone (Trancopal, Winthrop), a new muscle relaxant agent, produced "excellent and prompt" results in relieving skeletal muscle spasm in a series of 39 patients (Am. Pract. & Digest Treat. 10:1743, 1959). The spasms were caused by such conditions as traumatic injuries, bursitis, rheumatoid arthritis, osteoarthritis, and intervertebral disc syndrome. The only side effect among the 39 patients was 1 case of slight dryness of the mouth.

Symbols and Medicine*

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THE WHY OF THE SUBJECT

Why from the huge bouquet of possible subjects has the Art Directors Club chosen the thorn-bristling rose of symbolism?

It is not enough to say that this is a problem of the greatest interest, for there are many others similarly worthy of your attention and even of greater importance. The selection of a subject for a conference, like the selection of a profession or a bride, is highly revealing of the chooser's psychology. In the case of a subject like symbolism, which so intensely interests our age, we must remember that every age has its own special preoccupations. As a matter of fact, no age ever chose its preoccupations; always the preoccupations chose the age. Man seldom chooses his basic preoccupations, any more than the bridegroom in old-fashioned plays "chose" his bride, whom, compromised by his amatory impatiences, he was forced to marry under the shotgun of her irate parent. The choice of a preoccupation, like that of a wife, was often imposed on man against his own will.

Every age has had its overwhelming preoccupations. In the neolithic world, it was how to survive the menace of the mysterious surrounding world; in archaic Egypt, how to attain immortality of the soul; in the Medieval world, how to conquer the fear of God in Heaven and of demons and plagues on earth; in the Renaissance, how to explore the mysteries of the open space beyond the seas and of the space within the human body. In our own time, we have passed from fighting for "ideas," like Dadaism, socialism, laicism, Fauvism, and parliamentarism, to exploring the symbols that represent them, symbols that are really ideas with a mask underneath which there burns an emotion.

WHAT IS A SYMBOL?

First, let us define the word "symbol." Etymologically, it is derived from the Greek *symballein*, "to throw together or join." A symbol is something that conveys to the mind an image of something else; it therefore "represents and conceals something else"; it conceals a much wider intrinsic meaning. Symbols have three meanings: a *conventional* meaning, or the relation between the word and the object it designates; an *accidental* meaning, that is, the emotional color the object may acquire, pleasant or unpleasant, happy or sad, depending on the individual experience to which it is related; and a *universal* meaning, for symbols are man's oldest and most

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international language, a "lost language" in which thoughts and emotions, many of them archaic, have become fossilized, but which can reappear in the most unexpected manner.[A]

SYMBOLS IN OUR TIME

Ours is a time of symbolism. From the moment we wake up we live in a world of symbols. The mute symbolism in the things surrounding us continually calls us to action. The water tumbler invites us with its crystal lips to drink; the Gillette blade —a tiny guillotine—bids us to eliminate our whiskers; the fried eggs—two golden suns nesting in an ivory sky—incite us to assimilate them into our metabolism; the jacket, hanging on its hanger like a fragment of ectoplasm, calls to us to fill its flapping arms with living flesh; the morning newspaper—a paper window on the universe—spurs us with words and images to think, to feel—fear, joy, anxiety, hope —and to act—travel, dress, buy, read, dance. The rest of the day is spent going from one circle of symbols to another, and when the day comes to an end and we go to bed, we cross the misty threshold of dreams and enter a spectral world where *everything* is a symbol.

THE CAUSES FOR OUR "AGE OF SYMBOLISM"

Is ours more an "Age of Symbols" than an "Age of Anxiety"? Anxiety has been present throughout all history, but much more so in the past than now, though man may have had no name for it, just as syphilis probably existed always but lacked a name until the sixteenth-century physician Fracastoro gave it one in his beautiful poem *Syphilis sive morbus Gallicus*.

In prehistoric times, man, menaced by the cataclysms of nature, by monstrous beasts, and by fears caused by his own ignorance, must have suffered torturing anxieties; and in the Middle Ages he must have been terrified by the fearful pandemic of the Black Death, which killed one fourth of the people in Europe. Our own age has ample reasons for anxiety, but it is not *the* Age of Anxiety, though its worship of allegory and symbol might well entitle it, together with the early Middle Ages, to the name of "Age of Symbolism."

The reasons determining ours as an Age of Symbolism can be found, I believe, in the arts, science, psychology, communications, and politics of our time.

The *artistic* causes of present-day symbolism began around 1907, when Picasso started splitting up the human face in *Les Demoiselles d'Avignon*. Later, surrealist and fantastic art contributed to the creation of an art of idea-symbols, just as impressionism had been an art of emotions, and classic art one of objects.

The *scientific* reasons are to be found in the fact that atomic physics and the quantum theory not only disintegrated the universe and, following the disconcerting lines of Einstein and Planck, set it up again as a "limited and finite space-time continuum," but also used symbols to elaborate their theories. In this sense, modern science, particularly physics, is "fantasy" conditioned by real data whose basic conceptions —starting with those of the point, line, surface, and volume—are purely imaginary creations with a symbolic structure.

The *psychological* causes began to prevail about sixty years ago, when an imaginative Viennese psychiatrist and his followers taught us how to plumb, from the "Nautilus" of the psychoanalytical couch, the mysteries of the abyss of the personal and the collective unconscious. Thus the life and art of our age became colored with sexual and mystic symbols, whose meaning still influences every act of our daily life.

The causes derived from *communication* techniques are exemplified in the movies and television, which concentrate in a few symbols the whole spectrum of human emotions, bringing with songs, words, and pictures a treasure of rich imagery and symbolism to the fireside. The inevitable offspring of these techniques are the use and abuse of symbols and symbolism in publicity and advertising.

The *political* causes are based on the fact that those nondemocratic political systems of today that have most influenced—for the worse—the progress of mankind founded their propaganda techniques (many of which unfortunately have also been adopted by the democracies) on a monstrous hypertrophic worship of symbols, from the gestures, popularized in pictures, posters, and television, of political leaders, down to slogans, hymns, watchwords, and other political phraseology highly charged with emotional symbolism.

These five great groups of causes, operating on people shocked by the electrified historical climate of our time, have been the reason for the symbol's becoming an extremely important part of our thinking, our language, our dreams, and our world. So intense has been the impact of the symbol that too frequently we confuse the face with the mask, the idea with its symbol, so that the symbol instead of being a mirror of truth often becomes a mask of falsity.

THE STAGES OF MEDICINE AS SYMBOLS OF HISTORY

Symbols interest the physician because medicine is essentially the art of deciphering the secret of those subjective symbols we call *symptoms*—headache, anxiety, insomnia—or of those objective symbols we call *signs*—edema, conjunctivitis, varicosities—so as to ascertain the process hidden behind their symbolical manifestations. Every patient is a treasure chest filled with pathological symbols, and the physician must know how to reconstruct, based on such symbols, the outline of the mysterious morbid process that caused them.

Passing from the individual to the universal, just as the waters of a river reflect the different blue and silver tones of the skies above as they flow toward the sea, so has medicine, perhaps more than any other profession, symbolically reflected down the centuries the influence of the civilization of each epoch.

Thus, the physiology of ancient Egypt, which stated the existence of "conduits" in the human body to carry the blood and humors, obstructions wherein caused "floods" in some parts of the body and "droughts" in others, was symbolic of the Egyptians' daily vision of their vast sun-scorched plains through which flowed the sacred river that could fertilize the land or condemn it to drought. The ebbs and floods of the Nile were symbolized in the "floods" and "droughts" of the humors in the human body.

In classical Greece, the Hippocratic physicians accepted two theories: that of the

four humors (blood, black bile, yellow bile, and phlegm), which explained disease as alterations of these humors; and the *pneumatic* theory, which considered disease as alterations of the pneuma or personal spirit, the counterpart of the universal spirit. Both theories were symbolic, the four-humor theory symbolizing the doctrine of the four elements of the universe, a doctrine established in the eighth century B.C. by the early Greek philosophers—Thales of Miletus, Anaximenes, Empedocles of Agrigentum, and others—and the pneumatic theory symbolizing the philosophical doctrine of the pneuma or universal spirit.

Byzantine medicine, which developed during the millennium when the golden-domed city of Byzantium, bulwark of Christianity, was besieged by Arabs, Tartars, and Ottomans, was a medicine of compilations and summaries of classical medical knowledge. It was a symbol of flight into time. Barred from traveling spatially beyond the walls of their beleaguered city, the Byzantine physicians—Oribasius, Aëtius, Paulus of Egina, and Alexander of Tralles—traveled more than a thousand years into the past, until they reached the sources of classical knowledge. This flight into time was also symbolized in the work of the Byzantine artists, who found escape from the besieged city in time-consuming stained-glass work, enamels, miniatures, and illuminated manuscripts.

Renaissance medicine, which explored the wonders of the human body through dissection and sketching under Vesalius and the artist-anatomists, Verrocchio, Pollaiuolo, Donatello, and Leonardo da Vinci, was a symbol of the explorations that were then being made by the conquistadors and other navigators in the *terra incognita* of the Indies. The longing to know the open spaces overseas had its counterpart in the longing to know the still unknown inner space of man's body.

The medicine of the seventeenth century, which witnessed Harvey's discovery that the blood *moves* and does so *in a circle*, was symbolic of the then prevailing baroque art, which exalted motion and emotion, characteristics reflected also in Shakespeare's plays, which, like Harvey's scientific writings, abounded with the words "blood" and "heart."

The concern of the medicine of the Enlightenment with the infinite and the infinitesimal, as exemplified in the work of Leeuwenhoek, who with homemade lenses explored the invisible world of animalcula imprisoned in a drop of water, was symbolic of the artistic interest in the world of minute details—the "finite"—exemplified in the magnificent paintings of Vermeer, executed at the same time as Leeuwenhoek's work and beneath the same tarnished-silver sky of Delft.

Medical encyclopedism at the beginning of the eighteenth century was symbolized by the general encyclopedism of the age, just as the realism of Claude Bernard's physiology was symbolized in the realism of Émile Zola's work.

In our own time, advances in ophthalmology at the beginning of the century were symbolic of the new visual attitude in painting reflected in Seurat's pointillism; the new physics of light and form—so important in medical refractometric apparatus—was symbolized in the impressionistic trends of Manet, Monet, and Pissarro; exploration of the unconscious by Sigmund Freud was symbolized by Van Gogh's psychological expressionism; fragmentation of the human figure into new planes by Roentgen's radiology was symbolized by the multiplane cubism of Braque and Pi-

casso; the atomic disintegration of the universe was symbolized by levitation in Dali's work; and the creation of a physical space-time continuum was symbolized by Picasso's portrayal of figures standing simultaneously full-face and in profile, which introduced the dimension of time into the spatial world of painting.

In other words, in the history of medicine, the physician's inquiring attitude has always been symbolically parallel with the attitudes of human thought in other fields of civilization. Hence, the symbolism of medicine is of interest not only to the physician but also to all those—writers, artists, publicists—who need symbols for inspiration and in creation or communication.

A GLANCE AT THE ORIGIN OF SYMBOLS

Medicine has helped us to understand the anthropological origin of symbols. Whether innate or acquired, symbols have been mankind's secret code, a universal language that may have preceded all others. The most ancient concepts have been perpetuated in symbols, so that some of them have become fossils of human thought.

When, at some memorable hour, primitive man lengthened his arm and increased its reach by means of eoliths or stone axes, he began to carve all around him psychic shapes that existed only in his mind. First he made magic drawings, then esthetic ones. Sometimes his drawings were of natural objects (the origin of surrealist art); at other times he produced geometrical shapes (the origin of cubist and abstract art). Art was followed by pictographic and ideographic writing, pictorial representation preceding the phonetic representation of sounds. With the development of symbolic and hieroglyphic writing, such images, emotions, and concepts as were inexpressible in words became incrusted in these two forms of writing and became symbols. These symbols are today of great value to the psychiatrist in interpreting the fragments of broken mirror that dreams are, and the hallucinations of psychotics, in the light of the symbolism of the universal unconscious of mankind.

Symbols are also of great value in understanding ourselves and our fellow men, in the appreciation of art, and in human communication.[B]

THE MEANING OF THREE SYMBOLS OF MEDICAL MYTHOLOGY: THE EYE OF HORUS, THE CENTAUR, AND THE CADUCEUS

To tell the story of all the symbols that have played an important role in the history of medicine would be an unending task. Instead, by way of illustration, I shall deal with the meaning of three symbols directly connected with the history of the healing art, after which I shall tell how medicine helped to unravel the secret of three other symbols that exerted a deep influence in various periods of medical history.

The first three symbols are: the Eye of Horus, the centaur, and the caduceus.

The symbol of the *Eye of Horus* (fig. 1) appeared in history more than five thousand years ago. When speaking of the history of medicine, one is frequently inclined to think that it began with Hippocrates, but actually Hippocrates marks the chronological *halfway* point in the history of medicine. We shall have an accurate idea of the antiquity of medicine only when we realize that the first medical figure

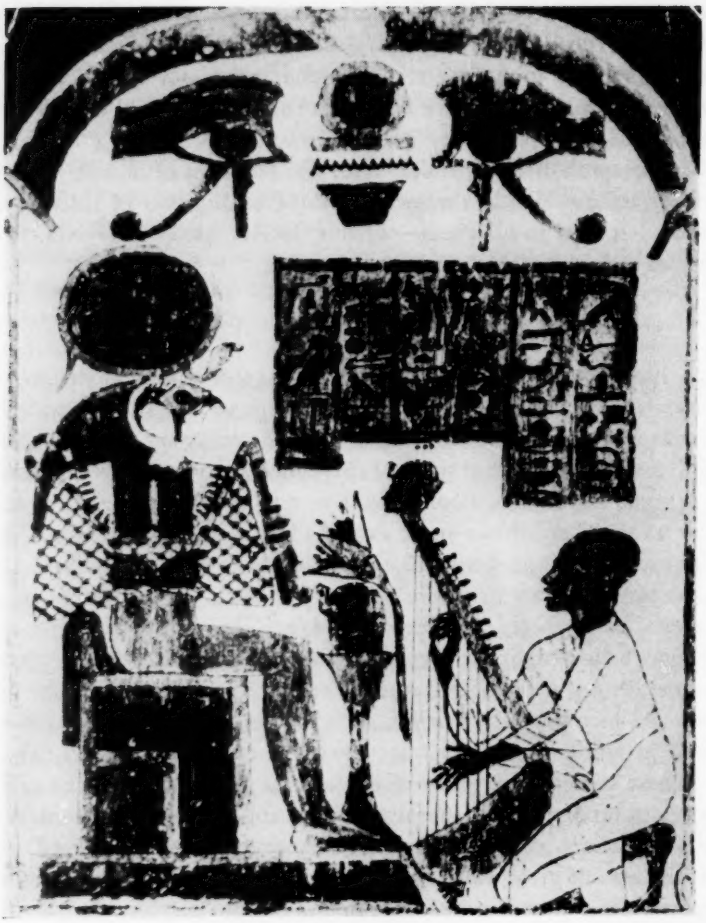

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FIG. 1. The Eye of Horus.

identifiable as an individual in history was the physician, architect, statesman, and musician Imhotep, who lived around 2750 B.C. and who built, not far from Cairo, the oldest stone structure existing today on earth, the pyramid of Saqqara. This means that Imhotep appeared in history almost twenty-five centuries before Hippocrates; more time elapsed between him and Hippocrates than between Hippocrates and Fleming!

Now, the Eye of Horus is of earlier date than Imhotep himself. Its legend is based on that of Horus, son of the goddess Isis, who lost his sight in childhood as the result of a vicious attack from the demon Seth, but recovered it when his mother invoked the aid of the wise scribe Thoth. Thereafter, with their lyres made of medicinal woods, the Egyptians implored the hawk-headed god Horus to cure their ills. The Eye of Horus, portrayed in Egyptian iconography as an "R" with an eye inside the top circle, became a symbol of healing, and *udjats* or amulets made of

gold, copper, wood, or wax, representing the Eye of Horus, were used as a protection against eye diseases and the Evil Eye. Later, Horus was replaced by other gods—for there have been fashions even in that—and the Eye of Horus disappeared, but it reappeared in the Middle Ages in the form of a sign similar to the number 4, which physicians and alchemists affixed to their prescriptions to invoke divine aid, thus reviving the Roman custom of writing the sign of Jupiter for similar purposes.

The sign R_x was introduced by the physician Krinas in the time of Nero to show graphically that the physician was subject to the power of the state. In a typical swing of history's pendulum, while in Nero's time the state fought Christianity, in the Middle Ages the Church, in its struggle against medieval paganism, compelled physicians in countries like Spain to use the initials of *Responsum Raphaelis* in place of the pagan sign of Jupiter. Gradually the sign of Horus merged with that of Jupiter and became the R_x sign, which we still use in the upper left corner of prescriptions.

The *centaur* symbol also played an important part in ancient medicine, so much so that the oldest symbolic representation of the healing art ought to be not Apollo or Aesculapius but Chiron, the noble, kind, and gifted centaur.

If the island of Cos was the cradle of Hippocratic naturalistic medicine, Trikka (now Trikkala) was the cradle of the psychotherapeutic medicine of the Asklepian cult and of the temples of Aesculapius. He who became the future god of medicine had a very complex mythological genealogy. To mention only one of the many legends woven around his birth, the sun god Apollo, enamored of lovely Coronis

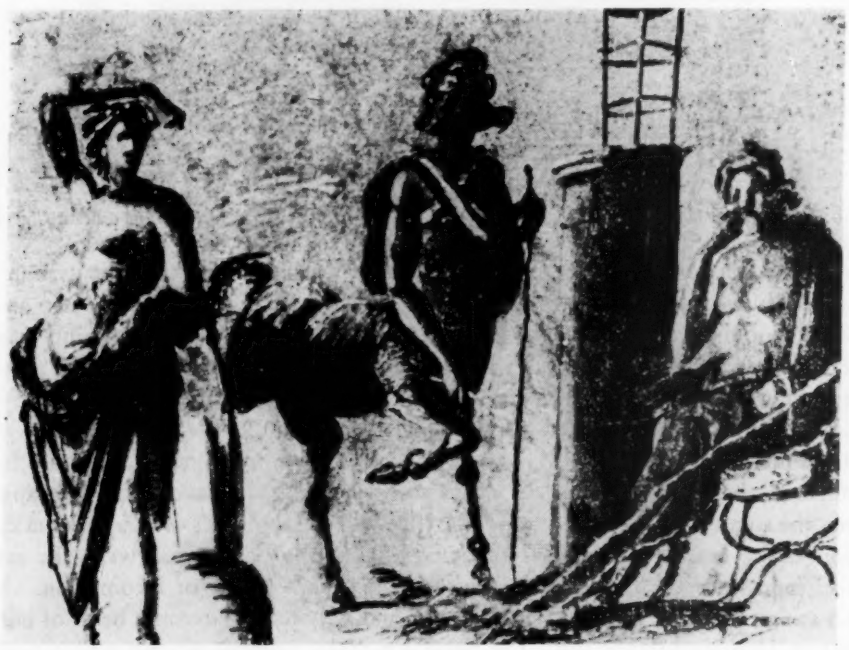

FIG. 2. Image of Hygea, the centaur Chiron, and Aesculapius (Late Roman).

FIG. 3. Medieval manuscript (eleventh century) showing Aesculapius, Plato, and the centaur Chiron.

the nymph, on being informed by his talebearer, a white crow, that the nymph had betrayed him with a mortal, promptly had her slain. Coronis fell, her arrow-riddled bosom bejeweled by a necklace of rubies, and the son in her womb was delivered by Caesarean section. The infant, Aesculapius, was then sent to the mysterious mountain where dwelled a strange race of monsters, half man, half horse—the centaurs—who were related to the gods. (Figs. 2 and 3.)

To understand the psychological origin of the centaur symbol, it must be remembered that the horse played an important role in the evolution of mankind. From the times of the Pharaohs until the time when Napoleon's *Grande Armée* marched through the ermine-blanketed steppes of Russia, the horse was (with the sailing vessel, and later the coach or diligence) man's main means of locomotion. Man, who at first used the horse in war chariots, and only much later as a beast of burden, came to identify himself with the horse for many reasons, among which was the unconscious craving to possess its supposed sexual power. The greatest symbolic

expression of the union of man and horse was the symbol of the Greek centaur, the only monster admitted among human beings. The centaurs were a wild, violent, and treacherous race, as exemplified by the centaur Eurytion and his companions. But Chiron was gentle, kind, and wise.[C]

Chiron, son of the Titan Cronus and the sea nymph Philyra, lived on Mount Pelion in Thessaly, where he taught the healing art to Aesculapius, who accompanied Jason and his Argonauts on their fabulous expedition in search of the Golden Fleece.

In the course of the centuries the symbol of the centaur became denaturalized. The horse was identified by Job and Jeremiah in the Bible as a symbol of aggression and power, an unconscious archetype of the unconquerable forces of the ego. The horseman began to be considered a unit with his horse, and the horse without a rider began to appear in dreams and fantasies, today analyzed as symbols of castra-

FIG. 4. Detail from medieval representation of Hermes with caduceus.

FIG. 5. Hygea and Aesculapius showing staff with serpent.

tion and death. The Spanish conquistadores, who performed their heroic and bloody deeds on horseback, were thought by the American Indians to be centaurs. But the noble, wise, kind, healing symbolism of the centaur has slowly yielded to its other symbolism: the erotic, aggressive, and violent forces of the human unconscious.

The third great symbol of medicine is the *caduceus*. Like Aesculapius' staff, the caduceus was born of the serpent cult. Worshipped and feared, adored and destroyed ever since prehistoric times, the serpent, able to move without feet, to cast off its skin, and to be reborn each spring, has always been an object of fables and legends. The American Indians worshipped the rattlesnake; Asiatics, the cobra; Africans, the python. Temples in honor of the serpent-goddess were erected by Druids and Navajos, by Brahmans and Apaches. Because of its undulating movements, the serpent became a symbol of rain and of the flow of water, as well as of wisdom,

wealth, sagacity, fortitude, health, convalescence, immortality, and longevity, that is, the most powerful symbol against disease, possibly because of the parallel between man's shaking off disease and the serpent's casting off its skin.

The two symbols derived from the serpent—the caduceus and the staff of Aesculapius—have as centerpiece a wand, which is regarded as an instrument of authority, a divining rod, a phallic symbol, or the tree of life, probably the palm tree, the *loma* of the Iranians, or the *soma* of the Vedic Hindus. The latter is the holy tree of the ancients; its sap is the oldest intoxicant of which we have record.[D]

The word "caduceus" derives from a Greek root meaning a "herald's wand" or "staff," and the root in turn derives from the Greek word *kerykeion*, meaning "to announce." Specifically, it was the wand of Mercury or Hermes, herald of the gods and protector of heralds.[E] (Fig. 4.) Mercury was also the god of dreams, magic, and commerce. Since he was born in the fourth month of the year, the numeral 4

FIG. 6. Shield of the U. S. Army Medical Corps, with Aesculapius' staff.

was sacred to him and the fourth day of the week was named after him: *dies mercurii* in Latin, *mercredi* in French, *mercoledi* in Italian, and *miércoles* in Spanish. Through the centuries the caduceus reappeared in printer's watermarks, on the prows of merchant vessels, as an emblem of secret societies, and finally as a medical symbol when Sir William Butts (d. 1545), physician to Henry VIII, used it in his heraldic crest.[F]

The second symbol, the staff of Aesculapius with a single entwined serpent, head up and tail down, appeared in Homer's time (around 800 B.C.) and was used as a symbol by Aesculapius, who went about performing his cures followed by a serpent of the variety *Elaphis aesculapii*. (Fig. 5.) His staff with entwined serpent, symbol of the healing art, has been adopted by several medical societies, although the debate still continues as to which of these two symbols is the more appropriate.[G] (Fig. 6.)

THE MEDICAL MEANING OF THREE FOLKLORE SYMBOLS: THE WITCH'S BROOM, APOLLO'S ARROWS, AND "COLD IRON" MAGIC

Medicine has uncovered also the secret of certain of the popular symbols that through the ages have exerted a great impact on mankind. As examples, I shall mention the broom of the witch, the arrows of Apollo, and the "cold iron" that wards off demons.

Witches are of interest in the history of medicine because in the late Middle Ages and early Renaissance some two million persons were burned in Europe on charges of witchcraft. The slightest denunciation, the least accusation of consorting with the devil or of attending a witches' Sabbath promptly brought death at the stake to the unfortunate victim.

Belief in the devil was born in the Middle Ages as a result of opposition to Christianity. In the popular mind, against God arose the Devil, and against Heaven Hell, and many people hungry for power and protection took refuge in satanic cults. The belief spread that witches made a pact with the devil by signing the deed with their blood, kissing the devil's anus with reverential ceremony in the infamous *osculum sub cauda*, and receiving from Satan the *sigillum diaboli*, a mark resembling a mole or tiny spot, which was insensitive to pain and did not bleed when pricked by the long iron needles of the physician-inquisitors (a phenomenon frequent in hysterical persons). This horrible witch-hunting ceased when the brave Swiss physician, forerunner of modern psychiatry, Johann Weyer proved in his famous book *De praestigiis daemonum et incantationibus* that witches were nothing more than pitiable mental patients.

Now, the main symbol of witches, *the broom*, has been medically interpreted as a survival of ancient fertility rituals, which, together with mystery rituals, are possibly the oldest religions in the world. Medieval images of witches and modern pictures in fairy tales always show the witch with a broom. (Fig. 7.) However, this broom is only a relic of ancient, ritualistic, soil-fertility dances, in which men carried a wooden pitchfork and women a broom as a symbol of domesticity. The broom was symbolic of the home and the woman's role therein. Whether used for

sweeping or for witchcraft, the original broom was a branch from the broom plant with a bundle of leaves at the end. This plant was supposed to possess magic and healing virtues, especially for the purpose of granting or denying fertility, and thus the broom still appears in gypsy nuptial dances. It is of interest to observe that the broom plant contained scoparium, a mild diuretic, so that its infusion was of moderately beneficial effect in many illnesses. Since it was the woman who handled herbs at home, she knew their virtues, in cooking as in healing.[H]

Another symbol interpreted by medicine is that of the *arrows*, used in iconography, from the paintings of the Roman Empire down to the modern cartoons created on Madison Avenue, to illustrate the propagation of an infection. This arrow symbolism began with Apollo, god of plague in Rome, who could cause plague with plague-bearing arrows as well as stop it.

As the late beloved historian Henry Sigerist showed, when Christianity succeeded paganism, it lacked a protective saint against the plague. With the outbreak of a terrible epidemic in the sixth century, it became essential to elect a patron saint against plague, and because of his history, St. Sebastian was chosen. As a youth, Sebastian, born in Milan, had been a captain in Diocletian's Imperial Guard. Because he later was converted to Christianity, Sebastian was shot at with arrows by Diocletian's guards until his body resembled a porcupine's. But Sebastian survived and it was necessary to execute him a second time (A.D. 303). Because arrows, symbol of infection and sudden death from the plague, had failed to kill him, which was tantamount to death and resurrection, Sebastian was chosen as patron saint against the plague, and a church was erected to him on the Palatine, over the ruins

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FIG. 7. Witch with broom and black cat.

FIG. 8. Renaissance representation of St. Sebastian pierced by arrows.

of an ancient temple to Apollo. Where centuries before people had invoked Apollo, they now prayed to St. Sebastian. (Fig. 8.)

Thereafter, St. Sebastian, who in fifth-century frescoes in the St. Calixtus catacombs in Rome appeared in tunic and pallium like the other saints, began to be portrayed by artists as a bearded soldier riddled with arrows. Later, in the Renaissance, since he had been made to assume the function of Apollo, he was portrayed not as a bearded soldier but as a handsome Apollo-like youth with his breast pierced by the arrow that could not kill him. (Fig. 9.)

The third symbol I shall cite was the subject of an excellent study by Dr. Walter Alvarez, and that is the use of "cold iron" (steel), in preference to brass, in extracting splinters embedded in the flesh or in preventing wound infections. Frazer has shown that primitive people added an iron nail to food so that demons could not infect it, and that a wounded person always kept a piece of iron nearby to drive away demons. Belief in the protective power of iron is substantiated by the custom

of hanging a horseshoe atop doors or gates and iron amulets and rings on babies' cradles.

On the other hand, iron was barred from many religious ceremonies in the ancient world. Roman and Sabine priests shaved themselves not with iron but with bronze razors, the magic plant mandrake could not be cut with an iron knife, and the Druids never used iron to cut mistletoe. In order to avert disasters, many Roman temples and thrones were built without a single particle of iron.

The aversion of both the gods and the powers of evil to iron was due, according to Dr. Alvarez, to the fact that for many centuries iron was an unsuitable novelty for the gods and their priests, who since the paleolithic age were accustomed to carved stone knives and tools. Religion, always highly conservative, having used flint knives for thousands of years in sacrifices, was a long time getting accustomed to the use of iron. Though the universal religions were spreading, still many people adhered to the ancient gods and rituals in which iron was interdicted. This was due especially to the fact that the first iron used, prior to 1000 B.C., was of meteoric origin and people believed it was impure and demoniac and were afraid to use it.[1]

MODERN MEDICINE, A SCIENCE OF SYMBOLS

Stepping from the past to the present, one cannot help realizing that medicine is a science submerged in a world of ever-increasing symbols, which it has invented

FIG. 9. Policamus, Sebastian, Quirinus. Catacombs of St. Calistus. Fifth century A.D.

or adopted itself and the use and abuse of which threaten to destroy the clarity of medical communication.

To a certain degree, the overwhelming plethora of symbolism in medicine is the result of its historical evolution.

In its prehistoric stage, when man was his own physician, licking, sucking, and rubbing his wounds in imitation of animals, and in its neolithic stage, when the first empirical treatments began, based on what man had observed to be useful in previous similar cases—in these two stages, medicine was literal, realistic, naturalistic and needed no symbolism. Later, when herbs and empirical physical treatments were supplemented by prayers, exorcism, and magic rituals, medicine started to become symbolic. A further step in that direction was the discovery of pictographic and hieroglyphic writing, which introduced in medicine the use of symbolic signs to describe the progress of disease and its treatment.

However, for many centuries and particularly during the Golden Age of Greece, medicine was strictly an *oral* science, and it was not until the Middle Ages, when the written word came to be used increasingly for teaching and for communication with other people, that medicine plunged into an orgy of symbolism and allegory, not only in relation to natural magic and zodiacal and astrological medicine, but also in medical description and illustration. Instead of simply describing or sketching disease, medieval medicine symbolized it in often unintelligible allegories. Thus came the transition from *seeing* things to *thinking* of them, and finally to *interpreting* them symbolically.

In our time as never before, medicine has accentuated the symbolic not only in its methods and language, but in its techniques of clinical exploration and in its educational aspects as well.

Basically, the excessive use of symbolism and hieroglyphics in modern medicine is the result of its excessive technicalization. When a science progresses as rapidly as medicine has, it must increase its vocabulary at great speed also, but sometimes this does not happen. As a result, medicine has had to invent terms, apply a second meaning to other words, or borrow from the linguistic armory of other sciences words that are not always appropriate and therefore increase still further the semantic and symbolic chaos.

Moreover, the vast volume of facts, data, concepts, and discoveries added to its coffers every day has compelled medicine to simplify its idiom by abbreviation. The result has been disastrous. Physicians, and particularly we psychiatrists, use a "shorthand" jargon often unintelligible even to ourselves. The excessive use of abbreviations in scientific reports, clinical case histories, and medical books is making still more difficult a medicine that, being submerged in an ocean of symbols, is already extremely complex.

Glance at any standard clinical history from any hospital and you will see a conglomeration of cryptic laboratory data, figures, signs, abbreviations, tables, numerals, percentages, and concentrations, which reflect faithfully the state of the patient's basic humors, of his vital movements, and of his physiological functions, but not a trace is to be found anywhere of the spirit that distinguished the Hippocratic clinical history, which was above all a picture of a suffering human being, victim of

disease. Fortunately, new trends in biographical and psychosomatic medicine are marking the return to the study of the *whole* patient and of his disease in relation to his whole life, his personal history, and his environment.

Until this approach is adopted by all physicians, imagination will be needed to translate the detached coldness of the tables and graphs of a clinical history into the dramatic reality of the sick man struggling for life.[J]

IMITATION, SCHEMATIZATION, AND SYMBOL

Since medicine is the science I know best, I have here approached from a medical standpoint the problem of the abuse of symbols and symbolism in our times, and the need to restore their true value to avoid the danger of their abuse.

But first let us inquire frankly: Is the symbol superior to other ways of interpreting reality? I believe that, from a purely intellectual point of view, it definitely is.

Let us imagine that we want to depict a human eye. There are three ways of doing so. The simplest and most direct method is *to imitate* reality, to draw the eye exactly as it appears to us. The second method is *to schematize* the eye in a diagram, indicating the basic ocular structure with a few clever lines. The third way is *to symbolize* the eye by means of an outline that not only conveys the anatomical reality of the eye but also interprets its function as a marvelous photographic camera in the human being.[K] The same methods could be applied in the portrayal of a face, an airplane, an eagle, a star, or a flower. In each case, the reality can be imitated, schematized, or symbolized.

From the viewpoint of intellectual quality and efficacy, neither the imitative nor the diagrammatic representation of reality has the high rank of the symbolic representation. For while literal imitation of visible reality is the work of a skillful hand, and schematization is the work of the abstractive function of reason, symbolic interpretation is the work of a constructive and symbolizing high intelligence.

In such sense, "modern" art—an art of ideas and symbols—can claim an intellectual supremacy over the naturalistic classic and imitative forms of art, since it not only schematizes but also symbolizes and *interprets*. This makes it even more imperative to protect symbols, use them properly, and avoid their "diseases."

"DISEASES" OF SYMBOLS: INTOXICATION, INFECTION, TRAUMATISM, AND DEGENERATION

If we apply a medical criterion to the condition of symbols and symbolism in our time, we observe that symbols in our age suffer from a series of diseases that can be diagnosed medically.

Strictly for the sake of simplification, diseases may be classified in medicine into four groups: infections, intoxications, traumatisms, and degenerations—for instance, brucellosis, lead poisoning, fracture of the femur, and arteriosclerosis, respectively.

Now, in my opinion, many symbols today suffer from one or the other of these four illnesses, and unless some treatment is promtply applied, the end will be the same and as inevitable as that of every untreated disease: aggravation, invalidism, or death of the symbol.

As examples let me cite the intoxication of the cross symbol, the infection of the swastika symbol, the traumatism of the atom symbol, and the degeneration of the symbol of ataraxia. All these diseases of symbols can be summarized as a pathological deterioration of the symbol in our own time.

Take, for instance, the symbol of the *cross* as an example of deterioration by *intoxication*. Like the majority of primitive symbols, the cross is a symbol of solar origin. Most primitive myths, symbols, and even religions are essentially solar in origin. The life of all the great Oriental religious reformers includes the birth, rise, and death of the prophet, god, apostle, or messiah, who symbolizes the dawn, noon, and setting of the sun in its journey from east to west. Another sun symbol is the inner light and mystic halo of reforming religious saints. In all mythologies the sun concept represented the conscious and elevated, and the moon and earth concepts the profound, what was submerged in the unconscious.[L]

The Christian-type cross has been found in the temples of Karnak, sometimes set up at crossroads. Egyptians, Phoenicians, and Chaldeans symbolized new life by the solar cross—originally perhaps a cross made of two crossed branches for making fire—and the cross has also been found on the breasts of statues excavated in pre-Columbian cities of Central America. In Babylon the cross was associated with water deities; in Assyria it was an emblem of creative power and eternity; in India, China, and Scandinavia it represented the heavens and immortality; and among the Mayas it was a sign of rejuvenation and freedom from physical suffering. In the Dionysian and Eleusinian mysteries in ancient Greece, the cross was placed on the initiate's breast as a symbol after his "rebirth." Universally, the cross appears to have been a symbol not of tragedy or defeat, but of strength, happiness, and eternal love. The cross of the Calvary became a symbol of miracles, able to perform healings upon whoever touched it. In Russia, *troitea* or cross trinities were put in crossroads for their miraculous powers.[M]

The cross, a symbol of sublime simplicity, changed the course of a great portion of humanity by becoming the guidance, inspiration, counsel, hope, and stronghold of millions of human beings during many centuries. But gradually, through intoxication with other meanings, the cross came to be considered a symbol of death and destruction, a negative and funereal symbol. People gradually began to see the cross as a symbol of past or imminent death, of torture and disaster. In medicine, for instance, crosses were used in laboratory reports—for example, Wassermann tests—to denote positive reactions indicative of sickness.

Hence, the cross—by a negative intoxication of the original positive symbol—became a psychologically negative, unpleasant, and sad symbol, though originally it was a positive symbol of joy and happiness and for religious people still is a pious, inspiring symbol. Perhaps because of its special geometrical structure of two strokes crossing one another negatively, the cross was condemned from the start (even without its symbolic connection with Christ's Calvary) to become a symbolic image of tragedy and death. It is sad, nonetheless, that few persons today recall the original joyous symbolism of the cross.

An example of *infection* of a symbol is the *swastika*, a cross with arms prolonged at right angles. Originally, the swastika was a symbol of wisdom and good luck, and

it has been found in prehistoric burial grounds in Scandinavia, Persia, Mexico, India, Peru, Greece, Scotland, and North America, where it was always associated with sun worship. The most prevalent meaning of the word "swastika" was favorable, since it derived from the Sanskrit compound meaning "to be well." The swastika, therefore, was originally a sign of well-being, meaning that though the labyrinth of life is confusing, the way of light crosses through it.

The symbol of the swastika was stricken with a mortal infection when, some thirty years ago, a paranoid schizophrenic Viennese house painter succeeded, using all the resources of modern propaganda, including mass hypnosis and—why should we not say so—collective symbolism, in dominating almost all Europe on his way to mastering the whole world. The swastika, which had been a symbol of well-being and enlightenment, then became a symbol of chaos, sadism, oppression, and tyranny. Infection of its original meaning condemned this symbol to fall victim to a chronic infection, which will take centuries to heal, at least in the West, since in the East it is still used in relation to its original meaning, as on the cover of *The Indian Journal of Surgery*. (Fig. 10.)

A symbol deformed by *traumatism* is that of the *atom*. Originally, as conceived twenty-eight centuries ago in Greece by Leucippus and Democritus, this symbol

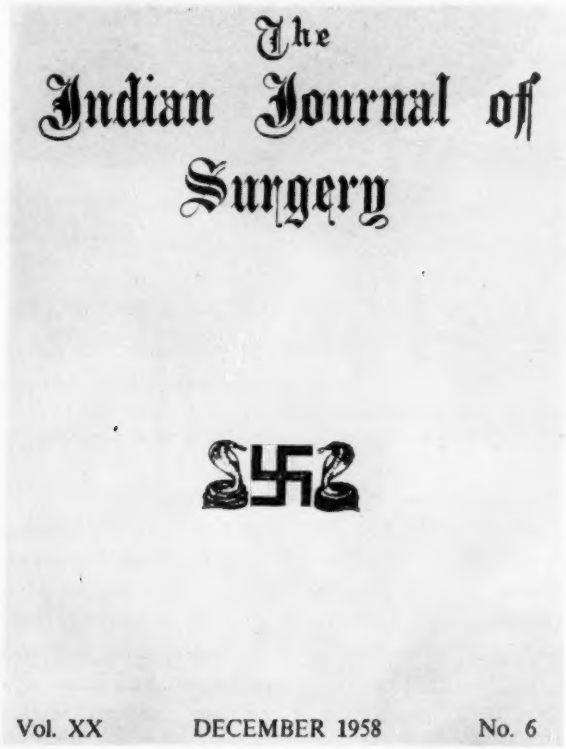


FIG. 10. Photograph of cover of recent issue of *The Indian Journal of Surgery* with symbol of swastika with two snakes on the sides depicting original meaning of the symbol.

FIG. 11. Three ways to "ataraxia": (I) Tranquility was achieved by Eastern peoples through various methods of self-hypnosis; by intense meditation, maintenance of a difficult pose (as in the ancient Hindu painting shown here), or through the use of narcotics.

was the first philosophical conception of how the universe was constructed. The atomistic theory served as the foundation not only of a philosophy but also of a curative system widely applied in Rome in treating huge masses of slaves in plantations. The atom was a symbol of the luminous and positive basis of the human being. Atoms, indivisible parts, were held to be linked together in various forms so as to produce objects, and everything, even the soul, was composed of atoms, which moved in the "void" that Democritus converted into "space." The moral ideas of Democritus begot the figure of the sage endowed with imperturbability, self-mastery, and serenity.

In our time, the atom and atomism have become the victims of traumatism, despite the concepts of Einstein and Planck, who employed them to perfect the

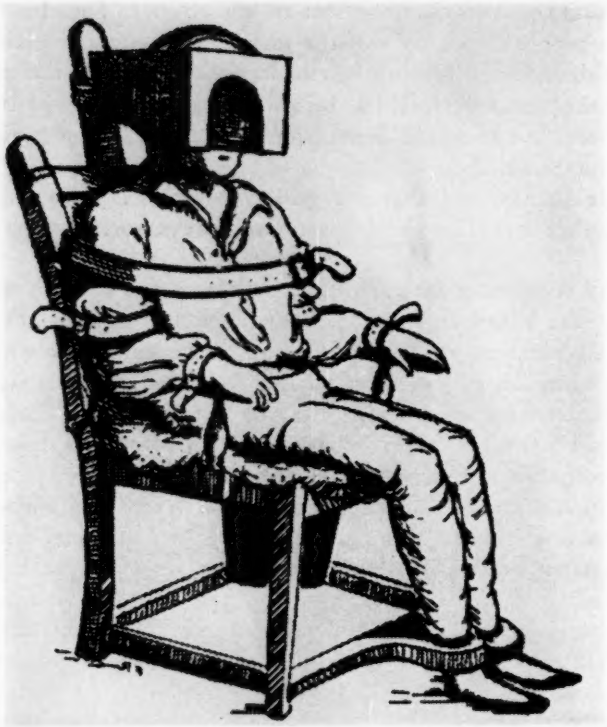
theories that form the basis of our present atomic physics. Such has been the mental impact on the people of our time of the image of atomic and hydrogen bomb explosions with their fearful mushroom clouds, prelude to a cosmic apocalypse, that atomism, and the atoms with it, has turned into a symbol not of construction and planned structure, but of world destruction, and hence into a frightful menace to twentieth-century man.

Ataraxia, the last symbol that we will consider, has been the victim of *degeneration*, like that caused by the degenerative diseases such as nephrosis or arteriosclerosis.

We are today witnessing the exaltation of anxiety and anguish by neurotics and pseudo-artists—the angry young men of England, the existentialists of Montparnasse, the beat generation in this country—but there was a time when the opposite was the rule, when ataraxia or a state of serenity was greatly sought after. This search was characteristic of the school of the Skeptics, particularly of Pyrrho (c. 360–270 B.C.) and Sextus Empiricus (second century A.D.), which defined the Skeptics' aim as imperturbability or ataraxia, later eulogized by the Epicurean and Stoic schools. Epicurean ataraxia was liberation from fear, like Seneca's impassivity, or what Democritus (460–370 B.C.) called *euthymia* and *ataraxia*, a positive, active, well-tempered emotion; the joviality, distinction, discernment, equilibrium, and moderation of a man *atarakthos* or free from commotion, worry, and perturbation, not lacking, but exercising moderation in emotions; the fearlessness preached by Aristotle; the state of alertness, serenity, and clear-sighted preparedness for action, which

BETTMANN ARCHIVE

FIG. 12. Three ways to "ataraxia": (II) A pleasurable feeling of languor was obtained for centuries in many countries with opium (as in this Chinese opium den), mentioned by Homer as a garden plant.



BETTMANN ARCHIVE

FIG. 13. Three ways to "ataraxia": (III) So-called "tranquilizing chair" used in Philadelphia in the eighteenth century by Dr. Benjamin Rush to restrain mental patients.

the philosopher Julian Marias called "a serene state of alertness ready for unexpected peril."

The affirmative form of ataraxia would be the Spanish *sosiego* of Ortega y Gasset—calmness, tranquillity—derived from the same root as *asentarse* (to settle), meaning to attain stability, steadiness, security, serenity, and authenticity (according to Marias). It is what St. John of the Cross meant by "now my house being peaceful," in his "Ascent from Mount Carmel." It is the opposite of anguish and fanaticism. Such positive ataraxia was exemplified in one of Ovid's fables of the halcyon, which relates how the halcyon built her nest floating on the sea and laid her eggs in the dead of winter. Raging storms and winds promptly ceased for fourteen days so that there would be calm while the halcyon brooded.[N]

But in our days the frantic search for tranquillity, the craze for freedom from anxiety has brought degeneration to ataraxia. Man, being what he is, *must* have problems and anxieties, for they are indispensable to make him strive for success in life. Excessive calm, tranquillity, inertia, passivity are only penultimate to death. (Figs. 11, 12, and 13.)

The beautiful symbol of ataraxia, therefore, which was no more than alert calm preparative to action, has degenerated into a foolish search for a moronic lethargy

that leads to nothing. Formerly, ataraxia was sought through philosophical contemplation and, what is more important, through *action*. For example, the Oriental *karma* yoga is in a way a search for mental peace through *continued* action. Today we seek tranquillity with Miltown and Perry Como! We no longer think of ataraxia as that beautiful inner peace of mind that comes when man finds fulfillment and contentment in his occupation and activities. This alert and active ataraxia of fearless, peaceful men is the symbol that, as in former times the cross opposed the eagle, must now oppose the demoniac plume of smoke that symbolizes atomism.

FOR A RESTORATION OF THE HEALTH AND JOY OF THE SYMBOL

It is therefore our duty to restore the true meaning and value of symbols if we do not wish, like the sorcerer's apprentice, to become the victims of our own creations. To do this, it should suffice to apply a few basic principles. In the first place, we must restore the true object existing behind each symbol. Second, we must not confuse the symbol with the object or idea hidden behind it. Third, we must use it adequately. Fourth, we must respect only good, honest symbols. Fifth, we must use symbols honestly. Sixth, we must make of the symbol not an end but a means toward the expression of our sentiments or ideals. And seventh, we must restore *health* and *joy* to the symbol.

The ancient world was for many centuries divided under the influence of two symbols: the cross and the eagle. Under the eagle were gathered the powerful forces of paganism, the ambitious purple- and scarlet-mantled emperors, the cruel captains with restless swords glittering in the sun, and the hordes of daring warriors hungry for pillage. Beneath the cross were gathered the forces of Christianity, the heroic saints and brave knights of the Crusades, the common people impelled by a craving for faith and adventure. For many centuries, in Byzantium, the Mediterranean, Spain, and Lepanto, the eagle and the cross relentlessly fought each other.

Today other symbols, especially political symbols, have taken the place of the cross and the eagle. The gesture of sublime simplicity of the cross, which spread like quicksilver over the entire planet even though in those days there were no fast means of communication, has been replaced by modern political gestures: the Roman salute of Fascism and the clenched fist of Marxism. More than of ideology, these are symbols of collective emotion. Their power lies not in symbolizing ideals, that is, emotion inflamed around an idea, but in being typical, imperative, and uniform. These are symbols of conduct, vehicles for imposing a discipline, uniforms of the soul that turn man into part of an organization, thereby making him renounce his individuality, his personal arrhythmic gesture, and acquire instead the symbolic, disciplined, rhythmic gesture common to an organization.[o]

Human gestures are living symbols, especially hand gestures, the first man makes when he is born and the last he makes when he is dying. The hands symbolize the heart, just as the tongue symbolizes the brain. This is why the ancients believed that special veins connected the hands to the heart, particularly the finger on which is placed the wedding ring—a symbolic surrender of the heart.

The hand, which has created almost all symbols, is the supreme vehicle of all

emotion-laden human impulses. Hence, in the face of the two conflicting symbols of our day—the atom and ataraxia—in their worst manifestation (the hydrogen bomb and tranquilization by melancholy drugs), it is essential to replace the mushroom-shaped smoke cloud of the atom with a stronger symbolic gesture that embodies the true meaning of ataraxia: the gesture of man's hands working, of the man who has peace of mind because he uses his hands creatively, or better still, the gesture of two hands clasped in the noblest symbol of all: universal brotherhood.

L'ENVOI

The original meaning of the word "symbol" was "emblem," or moral allegory, and "device," or the sign knights painted on their shields in the days of chivalry. And so I suggest that we return to that brave, romantic, and quixotic meaning of the symbol as emblem and device, so that we may restore health and joy to the symbol.

NOTES

A. About seventy years ago, a group of young poets in France created the "Symbolist" or "Decadent" movement. This was a rebellion against the too concrete "Naturalism" and the too restricted "Parnassianism" movements, which had failed to satisfy those poets who had adopted the sense of the Ineffable from Poe, Baudelaire, Wagner, and the pre-Raphaelites and sought a means to express it. Verlaine gave the Symbolist movement a watchword: *Pas de couleur, rien que la nuance*, and introduced the masters of the Decadents—Rimbaud, Corbière, and Mallarmé—in his book *Trois Poètes Maudits*. The movement later fell into decline and disappeared, but it left its seed in other areas of modern art.

B. Of great interest is one particular chain of symbols that shows that mankind continued to portray its repressed desires in the "lost language" of symbols. In 1909, Harold Bayley, in his book *A New Light on the Renaissance*, formulated the theory that since their beginning in 1282 until the latter half of the eighteenth century, the curious watermarks in writing paper represented a coherent and uninterrupted chain of emblematic symbols that could be fossil-thoughts. Frozen and preserved in the cryptographic sanctuary of these watermarks were the aspirations and traditions of many of the mystic and puritan sects that dominated Europe in the Middle Ages. This is why such watermarks are historico-psychological documents of great importance.

Thanks to the symbolism of watermarks, we know that the art of papermaking was introduced in Europe by Protestant sects—the Albigenses and Vaudois in France, and the Cathari or Patarini in Italy—prior to the Reformation. These heretic sects survived secretly for several centuries after having been excommunicated and proscribed by the Pope. Of identical origin are the symbolic decorations used by medieval printers, which can be explained by a similar code of interpretation. These printers, papermakers, and other artisans were precursors of the Renaissance, when symbolism was freed and began to appear openly in art.

C. "In that melancholy centaur Chiron," said J. Rof Carballo, "according to Kerenyi, incurably wounded by one of Heracles' arrows, were combined the animal or instinctive and the Apolline, the blind unconscious, and luminous reason. This figure, half theriomorphic and semihuman, became a fine physician because of his own wound, which made him more sensitive to the injuries and affections of other people, as happens with every good physician. The riddle posed in classical antiquity by the Chiron myth is clarified if we think that while the statues of Aesculapius were clothed in harmonious folds and full of tranquility, Chiron shows us his torso shaken by obscure and violent subterranean forces. Chiron is the bond between Asklepios and man's secret world—the unconscious, and one is struck with wonder at the profound intuition of the Greeks in placing Chiron at the most remote beginning of the profession of physician."

D. One of the oldest portrayals of the caduceus is on the famous green libation vase from Lagash, dedicated to the god Ningishzida by Gudea in Sumer, which is supposed to date from 4000 B.C. This caduceus

has a wooden axis with two serpents coiled around it. Originally the caduceus was an olive branch with two woolen threads wrapped round it, later changed into serpents while the branch terminated in a knot with two wings. The caduceus became the symbol of Mercury, or Hermes, when he gave Apollo a lyre made of the shell of a turtle, with dried fibers for strings, and received from Apollo in return a winged staff entwined with two golden serpents: the caduceus.

E. Travelers used to pile at crossroads stones or *trivia* (whence the word "trivial") in honor of Hermes.

F. In 1856, the U. S. Marine Hospital Service used the caduceus to denote the noncombatant character of the medical corps; in 1902 it was adopted by the U. S. Army Surgeon-General for all military physicians and allied professions.

G. It seems that the one preferred by the majority is that with the *single* serpent coiled around the staff, having been adopted by the American Medical Association in 1912, by various medical battalions in the last war, by the World Health Organization, and in 1957 by the U. S. Air Force.

H. A black cat was another of the witch's symbols. In 1566, one Agnes Waterhouse was burned at Chelmsford because she owned a mottled cat. From remote antiquity the cat was supposed to possess magic powers. In Ireland, Dr. Walter Langdon-Brown has pointed out, many cats can still be seen with their tails cut off, since country people believe that its blood cures erysipelas and herpes.

Another symbol of the witches were the "flying ointments," with which they smeared their bodies. By the way, witches were not always slovenly old hags, as many people still think; often they were young women of diabolical beauty, which made them all the more dangerous. The ointments enabled witches to fly over towns, protected by the blue-black night. This symbol has been interpreted in our own time by Professor Clark, who, upon analyzing the medieval formulas for such ointments, discovered that they contained belladonna, which produces hallucinations, and aconite, which causes an irregular action of the heart with the consequent sensation of falling through space. Together, these sensations made witches and their acolytes believe that they had flown through the heavenly spaces.

I. Three thousand years before it came into general use (700 B.C.), iron was a metal of meteoric origin and as rare as gold. Iron apparently began to be produced on a large scale at Hallstatt, near present-day Salzburg in Austria, but already in 1300 B.C. the Egyptians had been defeated by the Hittites because the latter used iron weapons.

J. A clinical case history contains only figures: temperature, pulse, respiration, blood pressure, respiratory quotient, total daily acetone rates, and daily glycosuria. But with a little imagination, by projecting the symbolism of such cold figures, we can readily see the heart-rending picture of a diabetic with acute circulatory failure and coma, intense and sharp drop in systolic volume, with the heart beating almost "dry." The columns of figures thus seen reflect a flux of matter and energy in great conflict, and the patient's life as a river of chemical, mechanical, and thermal movements, ebbing away at full speed, as the historian P. Laín Entralgo has brilliantly indicated.

K. In primitive mythology, the eye often represented the deity as a symbol of force, power, and luminosity. As J. Eduardo Cirlot recently indicated in his excellent study on this subject, the eye was often employed in mythological iconography, in which its magic powers were stressed by three processes: *displacement*, or placing eyes in places other than the anatomically normal, for instance, heterotopic eyes in the wings of romanesque angels; *diminution*, or reducing the number of eyes, as in Cyclops; and *augmentation*, or increasing the number of eyes, as with the hundred-eyed Argus of Greek mythology.

To the aforementioned uses must be added the use of the eye as a protective magic talisman, such as the eyes painted on Greek galleys, Oriental eye amulets, the eye painted on the faïence orbs used by Indochinese religious sects, and the eye symbolic of the Divine Providence stamped on ancient Christian Gnostic images. The eye was also used as a symbol of the powers of darkness in some medieval allegories of satanism. The eye has been considered a powerful magic symbol by artists also, and in our own times it has been used in surrealist painting (Ernst, Magritte, Dali). Cirlot in his work contrasts the symbols of the three attitudes adopted by man when, facing the Infinite, he inquires about his fate: the symbol of the *wall* (for instance, the Wailing Wall of Jerusalem), which represents a feeling of impotence in the face of the Infinite; the symbol of the *window* (the perforated jade disks of the Chinese), which represents a feeling of possible but restricted human activity; and the symbol of the *eye talisman*, which is not impotency like the first symbol, nor an opening offering escape like the second symbol, but a *mirror* that provides an answer to man, for upon looking into the eye he finds in himself the answer to his anguished queries.

L. The ancient symbols of the tree, cross, and serpent were at first identical with that of the sun saving mankind after the Flood, for they represented the same imagery of death, salvation, and resurrection. The serpent and the tree revive in spring, respectively renewing skin and leaves. In Paradise stood the tree of life, symbolized in due course by Christ on the Cross, that is, by ideas of death and salvation. The original sin was committed in the Garden of Eden, and as a punishment came the Deluge, but when the sun shone over the waters it saved mankind, a symbolic equivalent of Christ rising again to save all men.

M. In the Middle Ages there appeared a movement—which had nothing in common with that for a return to Helios vainly attempted by the Emperor Julian the Apostate—of transition to the rose symbol, expressed in the formula *per crucem ad rosam* (through the cross to the rose), which crystallized in the high Middle Ages into the *Rosenkreuz* ("Rosie Crosse") of the Rosicrucians. According to these people, the essence of the sun descended from the heavens into the flower, which was the earth's response to the kiss of the sun. This symbolism survived in the "golden flower" of Chinese alchemy. The blue flower of the Romantics was the last nostalgic representation of the rose in which was reflected the solar gold.

N. A form of ataraxia was exemplified iconographically in the ancient *mandalas* or magic circles, employed in Lamaism and yogist tantrism as *yantras* or aids to contemplation based on a quaternary system, the *quadratura circuli*, whose content, derived from lamaist dogma, is one of the most ancient religious symbols of humanity. *Mandalas* have also been found in paleolithic rock paintings in Rhodesia, and Jung discovered them as internal images in his patients' dreams. They are a psychic center in the personality not identifiable with the ego.

O. Accented by the resources of collective hypnotism and Pavlovian reflexes of emotion as described by Aldous Huxley.

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Emotional Hypertension and Anxiety Neuroses with Cardiac Symptoms: Treatment with Methylnonyl Dioxolane–Reserpine Combination

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Extreme nervous stress and strain, emotional upheaval, fears and anxieties have given rise to tension states. These initiate a tachycardia and palpitation of sufficient magnitude to make the patient seek medical advice and treatment. Anxiety is a significant factor in the etiology of diseases of the heart and circulation. Nervous tension and anxiety states bring about premature fatigue, and fatigue is the precursor of dysfunction of physiological processes in the organism.

In a setting of adverse life circumstances and associated emotional reactions, performances in terms of respiration and work of the heart are costly. This high cost may manifest itself in cardiovascular symptoms, which are not dependent alone on gross structural heart disorders.[1]

Anxiety may be accompanied by electrocardiographic changes in the absence of demonstrable heart disease.[2] Anxiety neurosis stands in particularly close relationship to physiological changes, especially in the cardiovascular system.[3] With the presence of either acute or chronic anxiety, the reparative processes in the body may be grossly handicapped.[4]

High blood pressure frequently makes its appearance in a setting of emotional stress in which there is a specific relationship between the emotionally disturbing agent and the personality structure of the individual.[5] Essential hypertension may represent, in part at least, an adaptive response of the organism to environmental stresses, particularly to stresses imposed initially on the higher nervous center by the challenges of everyday living.[6]

The response of a hypertensive person to emotional disturbances is manifested by symptoms whose nature, degree, and extent depend on the intensity of these disturbances plus the susceptibility of the individual. These symptoms are often multiple, dispersed, and do not conform to any clinical entity; associated signs of emotional disturbance, such as irritability, excitability, and inability to concentrate, are frequently present; physical examination is either negative or yields insufficient evidence to explain the symptoms; and there is a close relationship between periods of stress and the appearance of symptoms.

The occurrence of an anxiety attack that results in a rapid heartbeat and palpitation may frequently lead the physician to incriminate the heart. The physician must exercise care and caution in evaluating the symptomatology. If the patient is to benefit from a prescribed treatment, the physician should know his patient, have a thorough knowledge of the disease, and be aware of the capacities of the drugs to be used in treatment. It is most significant to initiate treatment with confidence and at the proper time.

In the management of the hypertensive state and cardiac symptoms, failure may arise from the fact that too much attention is concentrated on decreasing blood pressure and there is failure to recognize and accept the emotional genesis of the many associated symptoms. We postulated that primary attention to the anxiety states resulting from emotional stresses would yield greater therapeutic profits in these patients.

The patient and the disease should be considered of equal importance. A searching personal and family history survey is necessary; a thorough physical examination that includes measurements of blood pressure not only in the arms, but also in the legs, a close examination of the eye grounds, electrocardiogram and an estimate by roentgenogram of heart size, measurement of kidney function—all of these enter into making a diagnosis and determining the treatment.

In the case of cardiac pain, differential diagnosis may be a difficult problem and should not be regarded lightly. Pain in the chest in any patient, no matter how closely it may seem to be related to emotional factors, should receive serious consideration and a very careful physical study must be made.

Nothing is so valuable as a thorough history and a complete physical examination in establishing a good patient-physician relationship. Reassurance and encouragement are also necessary. The physician must be positive of the need for various restrictions before imposing them. Restrictions such as dietary and physical precautions and a change in the way of life may be extremely difficult for the patient to tolerate and may tend to intensify his symptoms.

Our preliminary experiences[8] with a combination of 2,2-diisopropyl-4 methanol-1,3 dioxolane and reserpine* prompted us to extend our observation and to evaluate a somewhat similar compound, methylnonyl dioxolane and reserpine,† in the management of emotional cardiac and hypertensive patients.

MATERIALS AND METHOD

This report presents observations in 60 patients; 45 of these were hypertensive, exhibiting or giving a history of emotional stresses—30 were men, ranging in age from 26 to 45 years, with an average of 37 years, and 15 were women, ranging in age from 32 to 53 years, with an average of 42 years; the remaining 15 patients exhibited anxiety neuroses with manifestations of cardiac symptoms—10 were men, ranging in age from 24 to 38 years, with an average of 32 years; 5 were women, ranging in age from 36 to 45 years, with an average of 40 years.

Our studies with the previous reserpine compound[8] showed the combination to be more effective than either drug alone; therefore we did not deem it necessary to evaluate each component of the methylnonyl dioxolane–reserpine compound separately as well as the combined drug.

History surveys in these patients suggested a diagnosis of emotional hypertension or anxiety neuroses with cardiac symptoms. The neurogenic manifestations in the

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* The trade name of National Drug Co. for reserpine is Avacalm.

† Methylnonyl dioxolane–reserpine capsules were supplied for this study by the Medical Research Department, National Drug Co.

hypertensive patients were demonstrated by irritability, inability to relax, and changes in personality patterns. In the cardiac patients the manifestations were constant agitation and worry, with repeated questions directed toward seeking assurance.

Physical examinations revealed no organic causes for the symptoms. The fact that complete physical examinations were made of these patients seemed to prove to the majority that something effective was being done for them.

The procedure was essentially the same in all of the patients, with the objective being to control the anxiety tension state and to produce relaxation. Methylnonyl dioxolane (250 mg.), which has the properties of a muscle relaxant, was combined with reserpine (0.25 mg.), which has a desirable effect on tension states, in a soft gelatin capsule. The dosage schedule followed by most of the patients was 1 capsule in the morning and 2 capsules at bedtime for 18 months.

RESULTS

In the hypertensive patients, the neurogenic manifestations were adequately controlled within an average of three weeks, and the hypertensive state was normalized within an average of six weeks in 70 per cent of the patients and within an average of 10 weeks in 89 per cent. The improvement was maintained in these patients with the maintenance dosage schedule during the 18-month observation period. In the remaining 11 per cent, other therapy had to be given in addition to methylnonyl dioxolane–reserpine to obtain a satisfactory response.

In the patients with anxiety neurosis with cardiac symptoms, the results were exceptional. In 92 per cent of these patients, palpitation, tachycardia, and chest pains were controlled within an average of eight weeks; these patients remained symptom free on a maintenance schedule of 1 or 2 capsules of methylnonyl dioxolane–reserpine daily. We considered 8 per cent of the patients in this group failures, although the symptoms were apparently relieved. These patients required some psychiatric treatment because of their psychological behavior pattern.

There were no significant side effects reported or observed in any of these patients. In a few there was some "stuffiness of the nose," which disappeared in a short time on continued treatment.

COMMENT

We might be subject to criticism because of the lack of controls in this study. Our goal was to restore the patient to a normal or nearly normal state in as short a time as possible. Regarding the use of placebos, we are in agreement with Leslie,[9] who stated: "It is difficult to see how placebos, because of their very nature, can act independently of suggestion . . . the effectiveness of the placebo is directly proportional to the degree of associated suggestion and receptivity of the patient." We make no apologies for not using placebo therapy and for not using one half of our patients as controls.

SUMMARY AND CONCLUSION

Forty-five patients diagnosed as having emotional hypertension were treated

with a combination of methylnonyl dioxolane (250 mg.) and reserpine (0.25 mg.), in a soft gelatin capsule. In 70 per cent the neurogenic symptoms were relieved, and the hypertension was normalized within six weeks; in 89 per cent, within 10 weeks.

Fifteen patients with anxiety neuroses and manifesting cardiac symptoms were treated with the same combination resulting in freedom from symptoms in 92 per cent of the patients within an average of eight weeks.

There were no side effects reported by or observed in the patients treated.

We have the impression that the methylnonyl dioxolane neutralizes the untoward reactions reportedly produced by reserpine, while reserpine enhances the action of the methylnonyl dioxolane in the types of conditions described.

The methylnonyl dioxolane–reserpine combination is as effective as the combination of 2,2-diisopropyl-4 methanol-1,3 dioxolane and reserpine, used in a previous study.

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Congressional Committee Wants Atomic Shelters

A Congressional subcommittee recently urged expenditures of $20 billion for construction of fallout shelters throughout the country. The proposal, if adopted, would save an estimated 46 million lives if this country is attacked, according to committee members. The report challenged the defeatist notion that radiation effects from atomic bombardment would kill all living things in a given area regardless of preventive measures taken. According to the report, the proposed shelter program would be a good thing even if there is no enemy attack, because large-scale construction of shelters would weaken enemy nuclear blackmail.

Obituary

Jean Lhermitte

(1877-1959)

On January 24, 1959, Jean Lhermitte, 82 years of age, eminent neurologist and neuropsychiatrist, honorary professor of the Faculté de Médecine de Paris, member of the Académie de Médecine, died in Paris. Rarely, if ever, did the history of neurology produce a figure reflecting with equal force the continuity and unity of life, man, and work. He was the son of a successful painter of rural life; he never lost interest in art, *The Eye of the Painter* (*L'Oeil du peintre*) and *Psychopathology of Vision* (*Psychopathologie de la vision*) being the titles of two of his monographs.

In his early years Dr. Lhermitte attended a religious college; he was always interested in problems arising on the borderland of medicine and religion, i.e., problems implied in mystic experiences and the miracle. His was the sole and daring attempt made by a modern experientially trained medical scholar to establish safe differential diagnostic criteria between mental disease and demoniacal possession. World War I and the great epidemic (encephalitis) that swept over Europe in the twenties furnished the biographical roots and the bulk of neurological material on which Dr. Lhermitte built his own views on nervous function and dysfunction. Although he did not deny his Cartesian tradition, he adopted nonmechanistic and dynamic interpretations, which he shared with J. Hughlings Jackson, C. von Monakow, and others. These views are particularly obvious in his works on pontine hallucinations and the body scheme (*l'Image de notre corps*). The results of his mature years should not let us forget the classical studies of his early years on paraplegia in senility, war neuroses (with G. Roussy), injuries of the spinal cord, sleep, dreams, and an almost endless list of communications presented to the many learned French and foreign societies of which Dr. Lhermitte was a member, or an honorary member, or president; distinctions did not fail to come in full to this eminent scholar, who was always successfully striving for a union between the proverbial hospitality of French science and the tribute to be paid impartially to the accomplishments of other nations.

During his Paris years, this writer was privileged to be in close and constant contact with Dr. Lhermitte, who, for many years, was the head of the Déjerine Laboratory for Brain Research. The unforgettable conversations of the small circle that assembled weekly around Dr. Lhermitte in the old faculty building focused not only on nuclei and pathways, but on man, life and death, human affairs at large, and the alarming problems arising from the cultural disaster that, at that time, after having gathered strength in Central Europe, threatened to engulf the whole of Europe and the best of French traditions as it remains embodied in such names as Descartes, Montaigne, Pascal, Pinel, Claude Bernard, and Pasteur.

A rare combination of enthusiasm and realism impressed this writer as one of the

most significant features of Dr. Lhermitte's personality. To these traits of his intellectual physiognomy must be added a tested faithfulness, generosity, and charm; these qualities are leaving this age of ours at an increasing pace, the universally minded scholar being condemned to make room for the professionally skilled expert and uninspiring anonymity being substituted for personal gracefulness.

Walther Riese, M.D.
Richmond, Va.

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BOOK REVIEWS

501 Questions and Answers in Anatomy. STANLEY D. MIROYIANNIS, B.S., M.A., PH.D., F.A.A.A.S., F.I.A.S. New York, Vantage Press, 1959. Pp. 332. Price $5.00.

The author, who is professor of gross anatomy and chairman of the division of basic sciences at Still College, Des Moines, Iowa, has prepared a helpful study guide for the student of medicine and of other scientific fields. The text consists of 501 questions concerning gross human anatomy and complete, well-organized answers.

The haphazard arrangement of the questions adds to their value since "it lessens the waning of interest and of attention, which invariably accompanies the reading of long pages of systematically arranged data." As an example, question 18, "Name the muscles of mastication," which has a simple five-part answer, is followed by "Name the branches of the external carotid artery," whose answer occupies 1½ pages.

An appendix contains a number of questions (but without answers) grouped under "Gross Human Anatomy," "Human Neuroanatomy," and "Human Histology."

This book should prove helpful and stimulating to every medical student.

The Care of Minor Hand Injuries. ADRIAN E. FLATT, M.A., M.D., F.R.C.S. St. Louis, The C. V. Mosby Company, 1959. Pp. 266. Price $9.50.

"Minor" hand injuries, the author explains, are those injuries involving a relatively small amount of tissue damage, outpatient treatment, and no postoperative complications. The book is divided into two parts: general principles of care and care of specific injuries. The latter include injuries to the nail, amputations, crush injuries, fractures, infections, and others.

The book is an excellent reference work. It is carefully written, clear, and to the point. Principles and methods of treatment are detailed and exceptionally well illustrated with diagrams and photographs. All information is well organized, and discussion of particular conditions can be readily found.

Antibiotics, Their Chemistry and Non-Medical Uses. EDITED BY HERBERT S. GOLDBERG. Princeton, N. J., D. Van Nostrand Co., Inc., 1959. Pp. 608. Price $15.00.

As the title implies, this book deals with uses of antibiotics other than medical. Chapter I is the introduction and covers the history of antibiotics, their effects, mode of action, and related subjects. Chapter II is devoted to the chemistry of antibiotics, and is of equal value to the reader whether his interest is their medical or nonmedical use. This chapter contains valuable, up-to-date information on the structure, solubilities, chemical properties, and derivatives of the following: streptomycin and related antibiotics, chloramphenicol, tetracycline, chlortetracycline, oxytetracycline, carbomycin, erythromycin, oleandomycin, methymycin, spiramycin, novobiocin, fumagillin, nystatin, tyrothricin, bacitracin, polymyxin, neomycin, kanamycin, viomycin, vancomycin, and penicillin.

Chapter III covers antibiotics in nutrition, including their use in feeds and their resulting digestion, metabolism, absorption by and effects on the animal body. Next are discussed their effects on specific groups, including human beings, fowl, swine, ruminants, and other animals. Next are covered the effects on specific organs, tissues, and functions and modes of action of growth stimulation.

Chapter IV deals with antibiotic influence on plants and plant disease control. Covered are methods of application, bioassays for antibiotics in or on plants, and effects and mode of action of the antibiotic in the plant. This chapter includes an invaluable table showing antibiotics and types of applications used for the treatment of more than 70 plant diseases.

Chapter V discusses antibiotics in food preservation, covering the various types of foods preserved by antibiotics, residues of antibiotics in foods, and economic and other benefits resulting from this method of preservation.

Chapter VI discusses the use of antibiotics to prevent contamination in the isolation of microorganisms.

The seventh and final chapter of this book deals with the public health significance of the nonmedical uses of antibiotics. It covers the appearance of antibiotic residues from the various uses already discussed in this book and their possible effects on the human body, such as allergic reactions, the possibility of superinfection, and the development of resistant microorganisms.

The book contains hundreds of references listed at the end of each chapter. These are unique in that the majority are not only references, but are abstracts as well.

This text is recommended for the libraries of all those interested in the field of antibiotics whether the interest be nonmedical or medical, since although it deals essentially with nonmedical uses, the effect of the latter have important medical significance. This book is not only exceedingly valuable as a text and reference, but unlike most books dealing with science subjects, it makes very interesting reading.—*Amiel Kirshbaum.*

Integrating the Approaches to Mental Disease. EDITED BY H. D. KRUSE. New York, Paul B. Hoeber, Inc., 1957. Pp. 409. Price $10.00.

This volume presents the proceedings of two conferences held under the auspices of the Committee on Public Health of the New York Academy of Medicine, conferences in which 48 eminent psychiatrists, psychologists, neurologists, and other students of human behavior participated. To review in any detail a volume of nearly 400 two-column pages is nearly as impossible as to abstract *Who's Who in America.* The simile is apt for another reason than bulk, for the roster of participants is almost literally a who's who in psychiatry.

In general, four schools of thought as to the causality of mental disorder are represented, namely, the organic, the experimental psychological, the psychodynamic, and the psychosocial. There seems to be agreement, as we might expect except from the most extreme, that, as Alexander put it, "We deal with three, not opposing etiological theories, but complementary approaches to the total problem." Dunham, speaking for the psychosocial viewpoint, expresses his position: "Each theoretical position which we have considered has a too narrow range for encompassing

a valid scientific explanation for the great variety of mental and behavioristic disorders." He adds that each position will have "significance with reference to certain categories of these disorders when we know what these categories are." Finally, he warns against revising any position when its hypotheses cannot be supported by available evidence. Most of the chapters consist of prepared papers, but several are made up of fairly free give-and-take discussion, well edited and as clear and readable as any such arrangement can well be. Some of the general headings are Areas of Interdoctrinal Unacceptance, Evidence of Interrelations among Doctrines, Clinical Principles in the Practice of Psychiatry, Cross Criticism among Disciplines, and the Role of the Basic Scientist in Multidisciplinary Research.

Binger, in the closing discussion, says: "Until psychiatrists take the responsibility for defining the problems, planning the research, and then seeking assistance from experts in other disciplines as needed, I do not believe that research on mental disorders will make much headway. I doubt very much whether collaborate research is possible unless there is leadership. That is the psychiatrists' job. One of the reasons why we seem to be at cross purposes is that the psychiatrists themselves have not assumed this job." All physicians as well as psychiatrists would profit by reading this book and pondering it well.—*Winfred Overholser, M.D.*

My Human Zoo: The Story of a Refugee Doctor. WALTER JUELICH. New York, Exposition Press, Inc., 1959. Pp. 110. Price $3.00.

My Human Zoo is the autobiography of a physician who came to the United States as a refugee from Germany before World War II. The author describes his life as a young man in Germany, the problems he encountered in setting up his practice in the United States, his difficulties in learning the English language, and experiences with his patients.

The title of the book refers to the variety of peoples from all parts of the world who were his patients.

Pediatric Pathology. DANIEL STOWENS, M.D. Baltimore, The Williams & Wilkins Company, 1959.

This monumental work is devoted to pathology of diseases of childhood. The subject is developed first from the standpoint of age periods and then from that of organ systems. Special emphasis has been placed on the histological aspects of various lesions. The photomicrographs are most revealing and instructive and well correlated with the text. Each chapter is an entity in itself presenting the current concepts of pathology in correlation with clinical phenomena. Discussed are many hypotheses, new terms, altered classifications, and unanswered questions about pediatric problems as related to pathology. There are not only concise clarifications of the end results of disease processes but original interpretative statements that have a practical bearing on the clinical aspects of disease in everyday practice. The book is well organized and diffusely illustrated and includes carefully selected lists of references.—*I. Newton Kugelmass, M.D.*

Anatomy and Physiology. Volume 1: Cells, Tissues, Integument, Skeletal, Muscular, and Digestive Systems, Blood, Lymph, Circulatory System. EDWIN B. STEEN, PH.D., AND ASHLEY MONTAGU, PH.D. New York, Barnes & Noble, Inc., College Outline Series, 1959. Pp. 332. Price $2.50.

This paperbound book, a convenient supplement to standard textbooks, is a summary of basic knowledge of anatomy and physiology, with application to common diseases. It is clearly and concisely written and is illustrated by numerous diagrams and charts showing the structure and organs of the human body.

The book will be useful to students as a guide for study and review.

Schizophrenia: An Integrated Approach. EDITED BY ALFRED AUERBACK, M.D. New York, The Ronald Press Company, 1959. Pp. 224. Price $5.50.

The nine articles in this book comprise an authoritative survey and appraisal of current knowledge of schizophrenia, ranging from biochemical studies, to somatotherapies, to psychotherapy.

Throughout the book, the various authors stress that although enormous advances have been made in pharmacotherapy of schizophrenia, such treatment is not the total answer to the problem. A combination approach, including also psychotherapy and somatotherapy, is necessary.

One chapter is concerned with the value of linguistics and kinesics as tools for research into interactional behavior within the family. Another interesting chapter is a report on a course of family psychotherapy, with study and treatment directed to the family unit rather than an individual family member.

Other chapters are concerned with a definition of schizophrenia, Russian developments in the field of neurophysiology, the body image in the schizophrenic reaction, cultural problems posed by a study of schizophrenic process.

The articles, all carefully written and well organized, form an important review of recent developments and therapeutic advances in schizophrenia.

American Handbook of Psychiatry. EDITED BY SILVANO ARIETI. 2 volumes. New York, Basic Books, Inc., 1959. Pp. 2098. Price $25.00.

In the editor's preface, the goal of this two-volume work is set forth as "a serious effort on the part of 111 authors to present the developments, concepts, trends, techniques, problems, and prospects of psychiatry today, in a form useful for both the expert and the beginner, in which every leading school of thought and every major approach is included"—and this monumental task has been admirably fulfilled to the credit of authors, editor, and publisher. The books encompass a broad range of subjects, from the standard topics of every textbook in psychiatry to less usual areas, such as contributions from related fields and legal, administrative, didactical, and preventive psychiatry.

Each of the articles that deal with specific conditions (psychoneuroses, functiona-psychoses, psychopathic conditions, organic conditions, etc.) is a small monol graph, complete within itself in its discussion of symptoms, diagnosis, treatment,

and special problems. Since each contributor is an authority in his field, and since each has been fair in his discussion in presenting alternative viewpoints as well as his own, this work is invaluable as a comprehensive survey of American psychiatry today.

To mention just a few of the less common areas discussed here, a complete review is included of commitment procedures in all the states of the country and their legal implications; in a chapter on religion, four authors survey the contributions of Protestantism, Catholicism, Judaism, and non-Western religions to psychiatry; one chapter deals with traumatic neuroses of war; and another is concerned with minor maladjustments, including marital problems.

The books are exceptional in format, as well as content, and they are completed by an excellent index. They are truly an outstanding contribution, of the greatest interest and value to every psychiatrist.

Families in Treatment: From the Viewpoint of the Patient, the Clinician and the Researcher. ERIKA CHANCE, PH.D. New York, Basic Books, Inc., 1959. Pp. 234. Price $5.50.

This interesting book is based on a study of techniques of clinicians and research workers in treatment of the pathogenic family. The author discusses the relationship between patient and therapist and how the attitudes of both can influence the course of therapy. She describes six family portraits of patients in the study group, with particular reference to immaturity of parents and its influence on their child's behavior, the complementary neurotic needs of father and mother, conflict relationships and tension situations in the family.

Statistical methods of analysis of these factors, of therapists' attitudes, and of progress of therapy are described. The book will be of great interest to all clinicians and research workers in child guidance.

Viral and Rickettsial Infections of Man. EDITED BY THOMAS M. RIVERS, M.D., AND FRANK L. HORSFALL, JR., M.D. Ed. 3. Philadelphia, J. B. Lippincott Company, 1959.

This unique presentation of viral and rickettsial infections reveals the mechanism and management of these diseases in everyday practice. Several new groups of viruses have been discovered in the last few years and correlated with specific clinical entities. Tissue cultures emerge as highly valuable agents in the study of viral infections. Cytopathogenic effects of many viruses led to the development of techniques for diagnostic procedures in vitro. Each of the 44 contributors presents comprehensive information on these infections, not only for the student but for the physician. After a preliminary evaluation of viral and rickettsial infections and the chemical and physical properties and patterns, the authors proceed to an evaluation of the virus-infected cell, bacteriophages, tissue cultures, serological reactions, epidemiology, and chemotherapy. The classical and new groups of diseases are each considered from the standpoint of history, clinical features, pathological picture, etiology, diagnosis, treatment, and epidemiology, with selected bibliography. The book is a credit to the editors, authors, and publishers.—*I. Newton Kugelmass, M.D.*

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